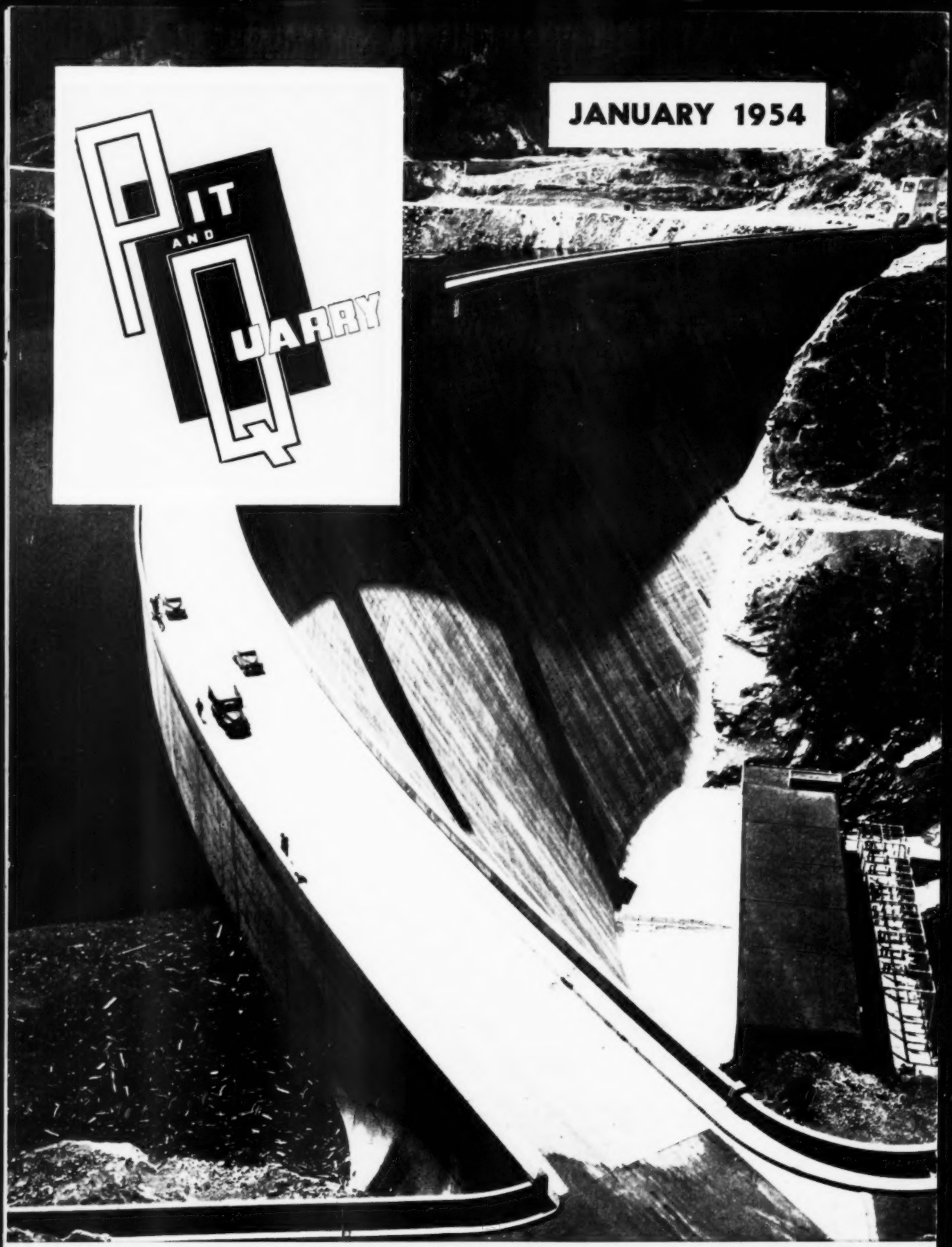
PIT AND QUARRY

JANUARY 1954



Recently Completed Hungry Horse Dam and Power Plant Project in Northwestern Montana.

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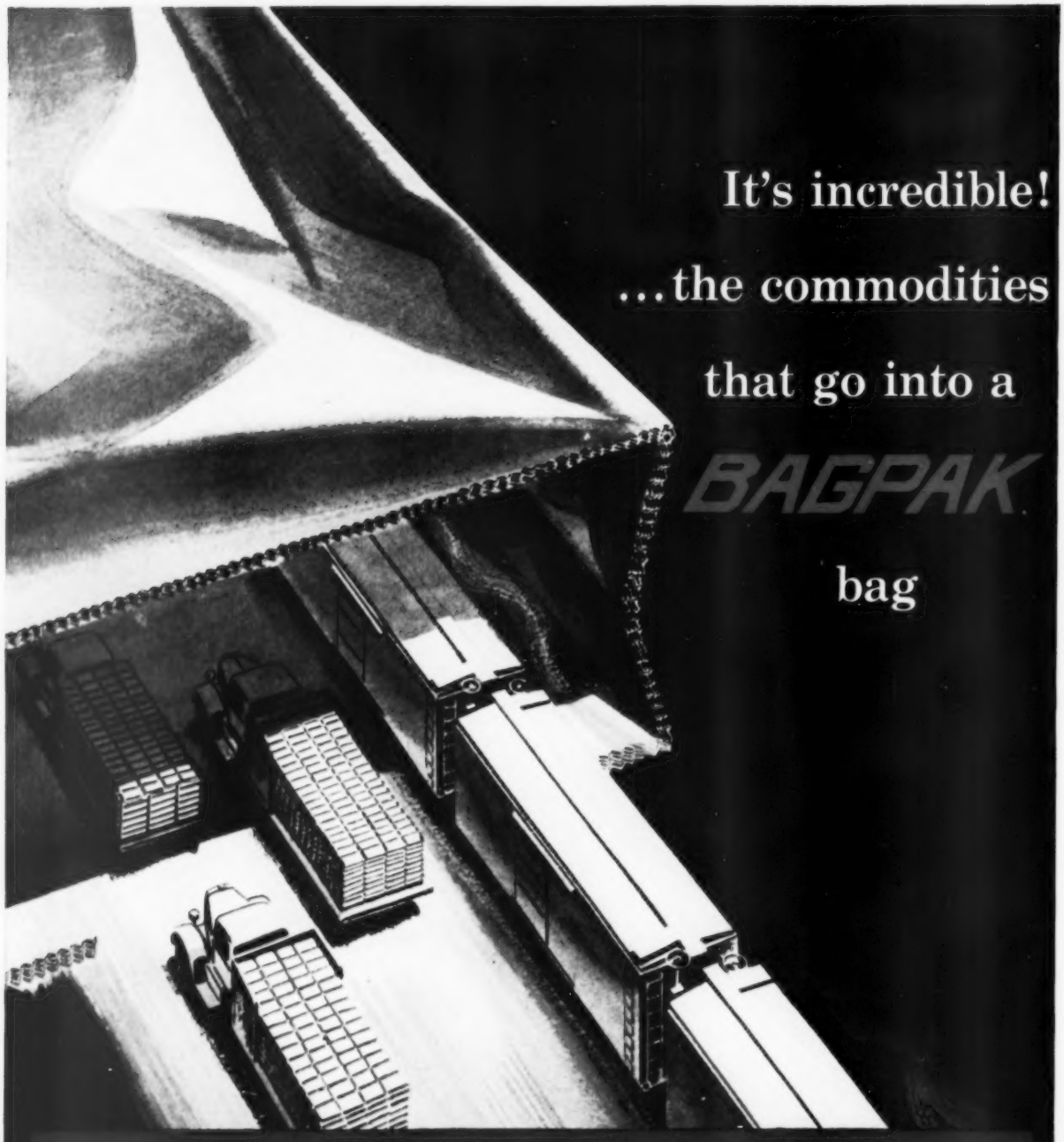

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Polystyrene—Feeds—Calcium Chloride—Salt—Ammonium Nitrate—Cement—Rosin—Fertilizers—Sugar—Flour—Insecticides—Fine Chemicals—Clays—Rock Wool—and over 400 other products costing from less than a cent a pound to over a dollar a pound are being packed in Bagpak Multiwall Paper Bags.

Bagpak also furnishes Bag Closing Machines. For details about bags and machines write to Bagpak Division, International Paper Company, 220 East 42nd St., New York 17, Dept. Q-7

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CANADA: The Canadian Paper Products Ltd., Montreal, Ottawa, Toronto

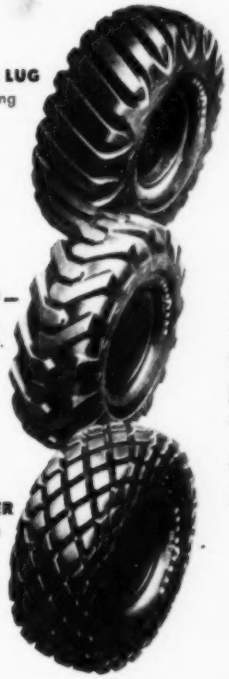
6.1 MILE SHORT CUT

sets earth-moving records!

IN THE HEART OF THE GREAT SMOKIES, between Black Mountain and Old Fort, two new 22-foot pavements with 4-foot center strip and 10-foot shoulders, have at last replaced a dangerous bottleneck.

The contract called for blasting and slicing record cuts through mountaintops—and phenomenal fills—but the W. E. Graham Construction Company of Cleveland, N. C., moved 3½-million cubic yards in less than three-quarters of the time estimated!

Not bad for a job that included an 880,000 cubic-yard fill, a 440,000 cubic-yard cut, up to 350-foot differences between fill bottoms and pregraded knolls (all within 450 feet of roadway)—and a 173-foot-deep fill over a 66" x 576' culvert!



HARD ROCK LUG for tire-killing work.

SURE-GRIP — top choice for traction.

ALL-WEATHER for maximum flotation.

IT's jobs like these that make contractors glad that "GOODYEAR IS THERE"—all there—with rugged, strong-pulling, long-enduring tires—specifically designed to do the best, most economical job on each piece of equipment.

That's why you'll find Goodyears "there" on so many tough jobs—*specified* by the men who keep those tough jobs rolling at lowest tire-cost per yard! Goodyear, Truck Tire Dept., Akron 16, Ohio.

FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

GOODYEAR

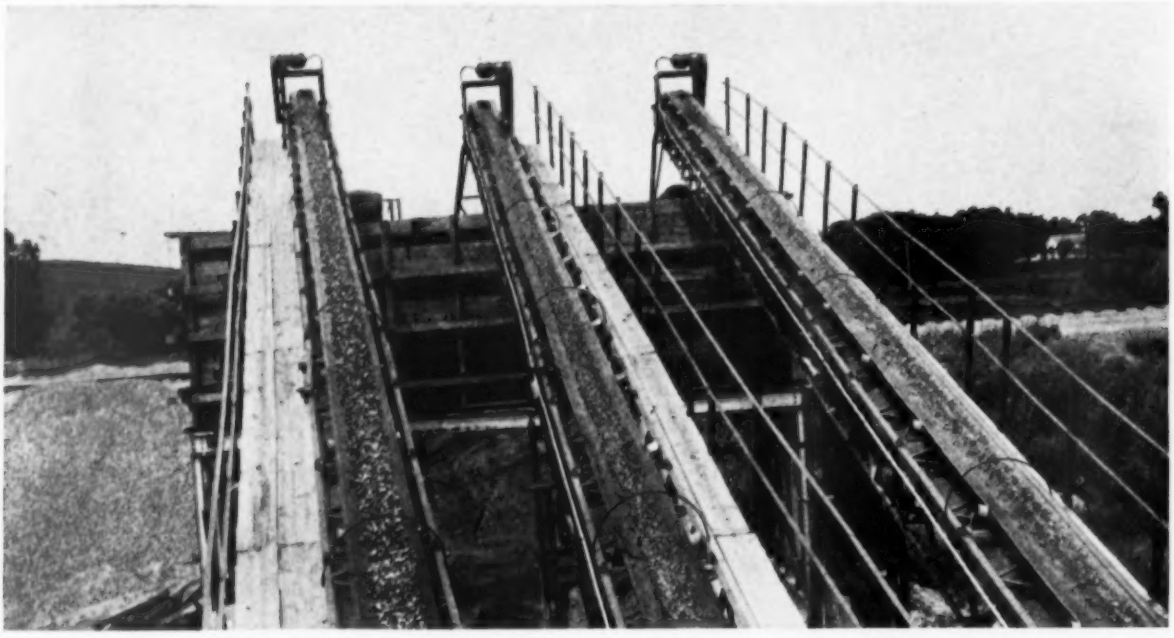
Sure-Grip, All-Weather—T. M.'s
The Goodyear Tire & Rubber Company, Akron, Ohio

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

PIT AND QUARRY, January, 1954, Vol. 46, No. 7. Published monthly by the Pit and Quarry Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy $1.00. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

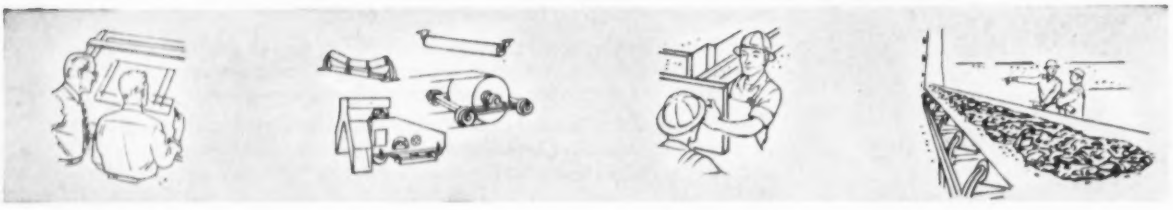
BEAT HIGH TRANSPORTATION COSTS--

carry the load via belt conveyors



Three inclined, Link-Belt belt conveyors carrying sized material and waste to truck loading bins at gravel plant.

LINK-BELT offers you the "total engineering" so necessary for top efficiency



DESIGNED FOR OVERALL EFFICIENCY

Because of its unrivalled experience, Link-Belt can do a better job of gathering and analyzing all data. Proposals reflect this understanding of the most practical way to fit conveyors into your system requirements.

BUILT FOR LONG-LIFE PERFORMANCE

Link-Belt manufactures all components and related feeders and conveyors. You are assured of the right equipment because of this breadth of line. And Link-Belt will supply the highest grade belts engineered to the job.

DELIVERS FULL RATED CAPACITY

Link-Belt follows through on every detail of the job, including electrical controls and even wiring and foundations. What's more, Link-Belt will furnish experienced erection superintendents, staffs and skilled crews.

ASSURES SATISFACTORY PERFORMANCE

When you rely on Link-Belt as a single source for your complete system, Link-Belt accepts responsibility for placing it in full operating readiness. We will also supervise modernization of existing systems.

Next time you're in the market for one belt conveyor or a complete system, call a conveying expert in the Link-Belt office near you. It's his job to help you get the best in belt conveying at the lowest possible overall cost.

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

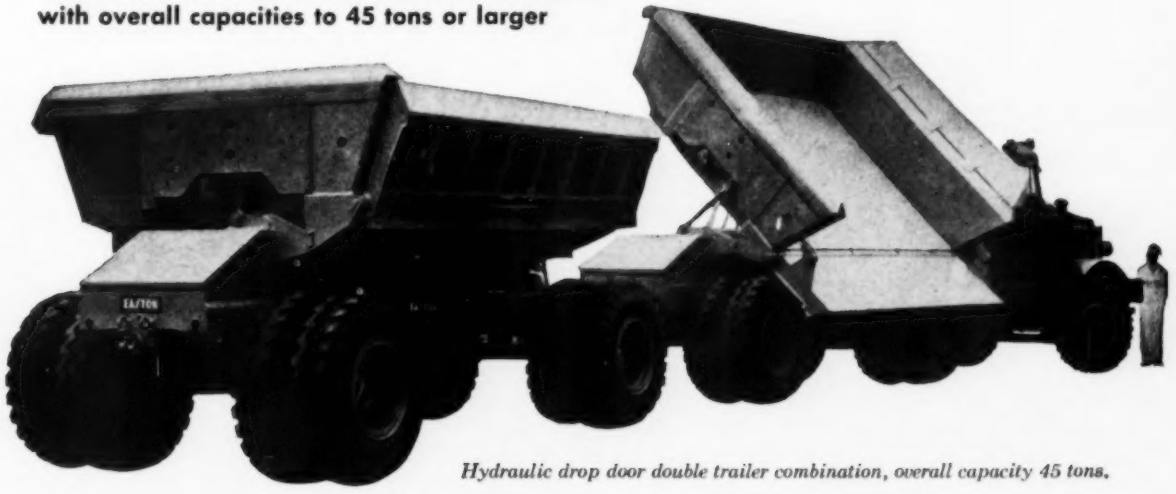
13.390-B

Standard units used separately or in combination

Here's New Flexibility

to meet varying haulage requirements

Double-trailer or truck-and-trailer combinations with overall capacities to 45 tons or larger



Hydraulic drop door double trailer combination, overall capacity 45 tons.

BIG EASTON COMBINATIONS are designed to provide flexibility where haulage requirements are subject to change. Changes in required tonnage, changes in haulage distance, changes in the type of material handled, changes in grades and road conditions, changes from job to job . . . these and similar developments can often be met quickly and efficiently, simply by coupling or uncoupling the converter dolly and rear trailer. The single or combination unit goes right to work with no time wasted. Also, for the big payloads to 45 tons and over, there's no need to experiment with costly, untried equipment when EASTON combinations provide the rugged, rock-proved dependability of standard EASTON body and trailer design. These big combinations offer a choice of several types and capacities for service with all makes of heavy duty off-highway trucks and tractors. Ask your local off-highway truck salesman for complete information, or write directly to EASTON.

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA.

EASTON

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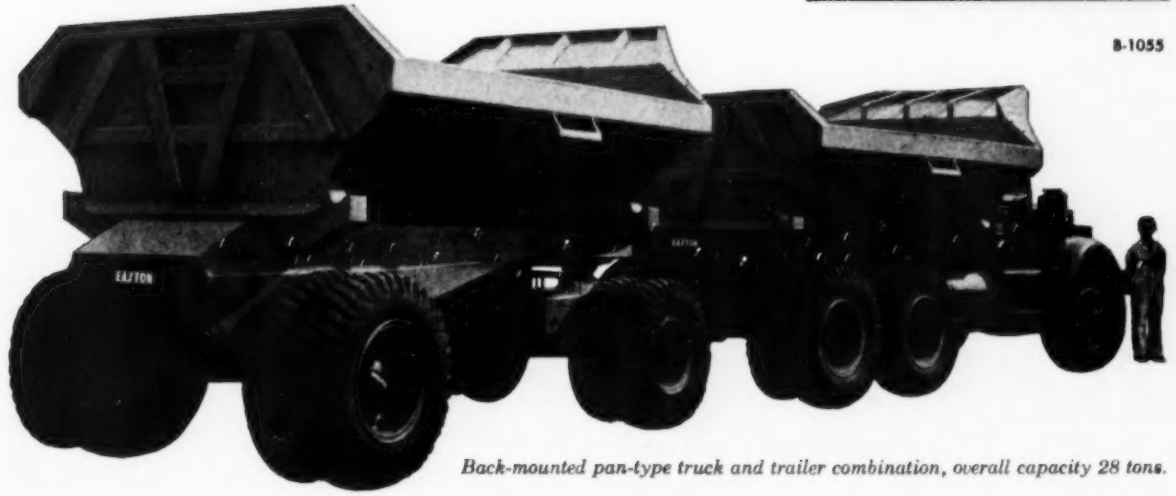

Back-mounted pan-type truck and trailer combination, overall capacity 28 tons.

HIGH I.Q.* Schramm AIR

COMPRESSORS AND TOOLS

*Interest for Quarrymen

SCHRAMM Model 600
Diesel Engine Driven
Air Compressor

Ask anyone with lots of experience in quarrying — "front office" man, foreman, or drill operator — why he's interested in the new SCHRAMM Model 600 unit.

He'll point out that it's "on the record" that this husky machine has what it takes to handle the air compressing angle of any job with the least fuss and the most effect.

This overall superiority is a combination of superb engineering and construction.

Simplified, streamlined design — fewer parts — watercooled operation with doors closed — less power needed — dual fan belts — these are only a few of the unique advantages that establish SCHRAMM as "high man" among practical quarrymen.

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SCHRAMM, INC.

The Compressor People

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includes

Air Compressors in sizes ranging from 20-cfm to 600 with Paving Breakers, Wagon Drills, Pneumafeed, Pneumajack, Pneumadriver, Rock Drills, Sheeting Drivers, Clay Spades, Backfill Tampers and a complete line of accessories.

Meeting the ROCK TEST

ROCK is this company's business. Here's a job that would test the mettle of any equipment. Greater crowding force, smoothness of dipper control, easier operation, accuracy of spotting, are just a few of the advantages that Northwest equipment brings you. They are advantages that show up in all hard rock work. Northwests are serving on some of the largest quarrying operations in the country. In many cases their speed is outproducing larger, slower equipment and their simplicity of design and dependable construction eliminates the constant irritation of minor adjustments and breakdowns that increase down time and reduce output.

The Northwest is a *real* Rock Shovel and if you have a *real* Rock Shovel you are equipped for any pit problem. Why not plan to have a Northwest? Talk it over with a Northwest Man.

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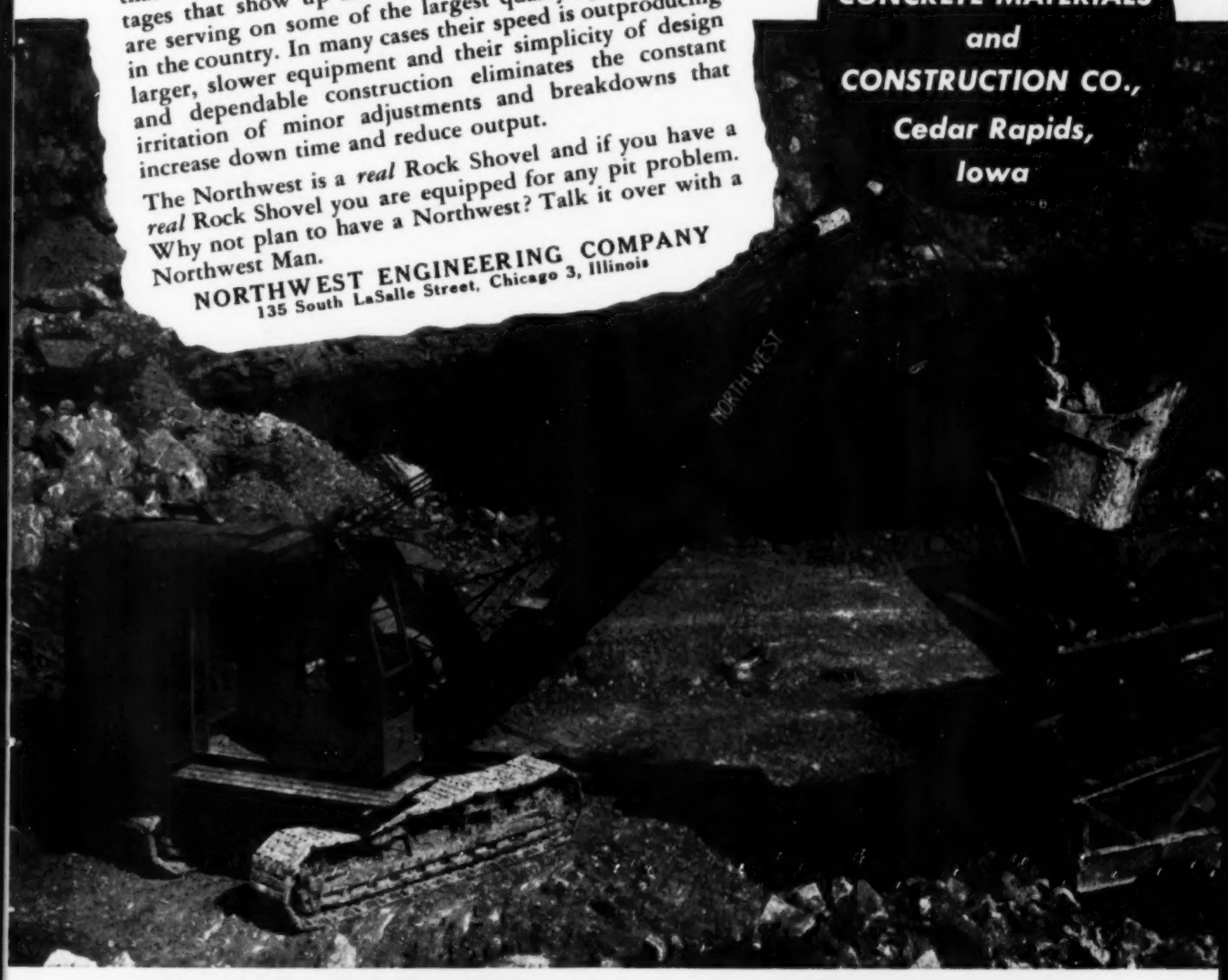
Cedar Rapids, Iowa



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SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

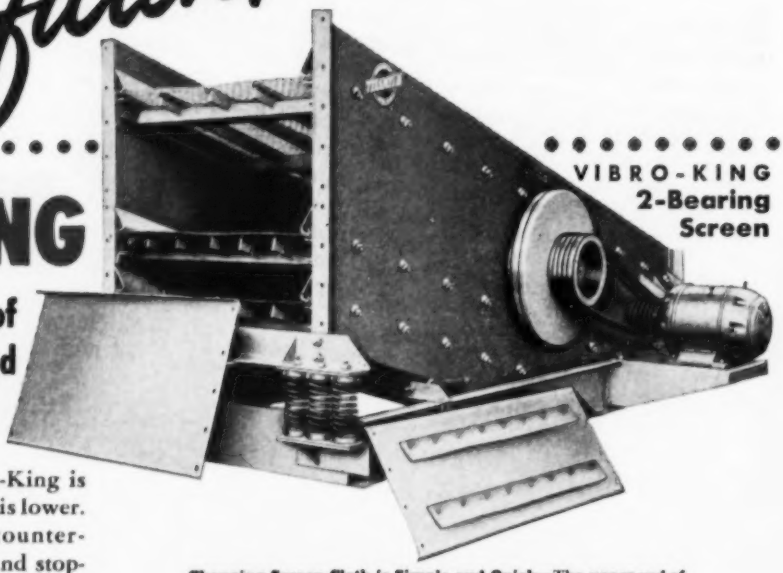
Convertible for any Mining Material Handling or Excavation Problem

TELSMITH

more efficient screening

VIBRO-KING

For Finished Screening of Medium and Small Sized Aggregate



VIBRO-KING
2-Bearing
Screen

With its two bearings, the Vibro-King is simpler, more efficient, and upkeep is lower. Telsmith-patented automatic counterweights assure smooth starting and stopping as well as exceptionally smooth operation. Its circular screening movement is uniform everywhere on the screen cloth, and is constant under any load. Entire vibrating mechanism, including vibrating unit and screen cloth, floats on nests of springs. Welded and reinforced main frame is *horizontal* for rigidity and easy installation. Cable suspension, if desired. Five sizes, 1, 2, or 3 decks.

Changing Screen Cloth is Simple and Quick—The upper end of the Vibro-King is readily removable, making it a much easier job to change screen cloth and saving a great deal of time.

Screen Cloth Mounting—At customer's option—screen cloth may be mounted in rubber on steel screen trays; or stretched over steel screen supports—protected by rubber—on any deck or decks.

SEND FOR BULLETIN 266

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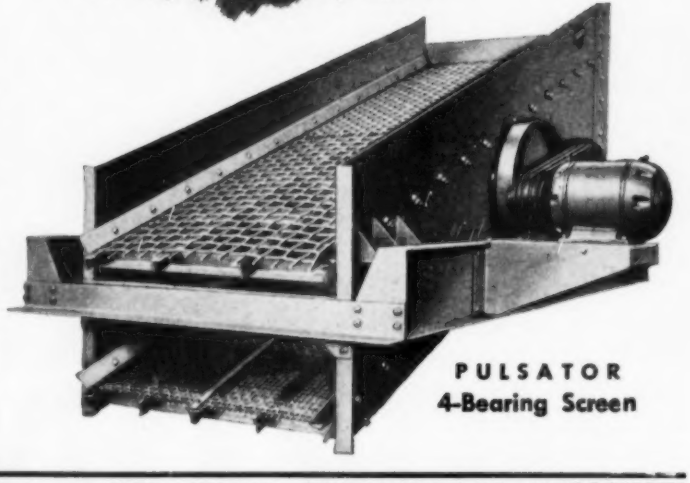
For Heavy-Duty Scalping

A four-bearing, heavy-duty vibrator . . . for all kinds of screening, especially scalping, or large sized aggregate . . . Pulsator's circular movement gives uniform, efficient screening on all decks and under heaviest loads. The best alloy steels, the finest antifriction bearings, protected by both labyrinth and piston ring seals, give longer life and lower upkeep. Eleven sizes, with 1, 2 or 3 decks.



PULSATOR
4-Bearing Screen

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Marens Eqpt. Co., Rochester, Mich. • Rish Eqpt. Co., Cincinnati 14, & Portsmouth, Ohio—Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va. Robert S. Bailey, 816 W. 5th St., Los Angeles 17, Calif. • Mines Eng. & Eqpt. Co., San Francisco 4, Calif. • Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash.

Yesterday's package rarely goes far enough

Today's Union Multiwalls do more things, provide more protection, than ever. Before you accept your present container as the best within reach, try Union Multiwalls. You may be amazed at the improvement they can make in your packaging.

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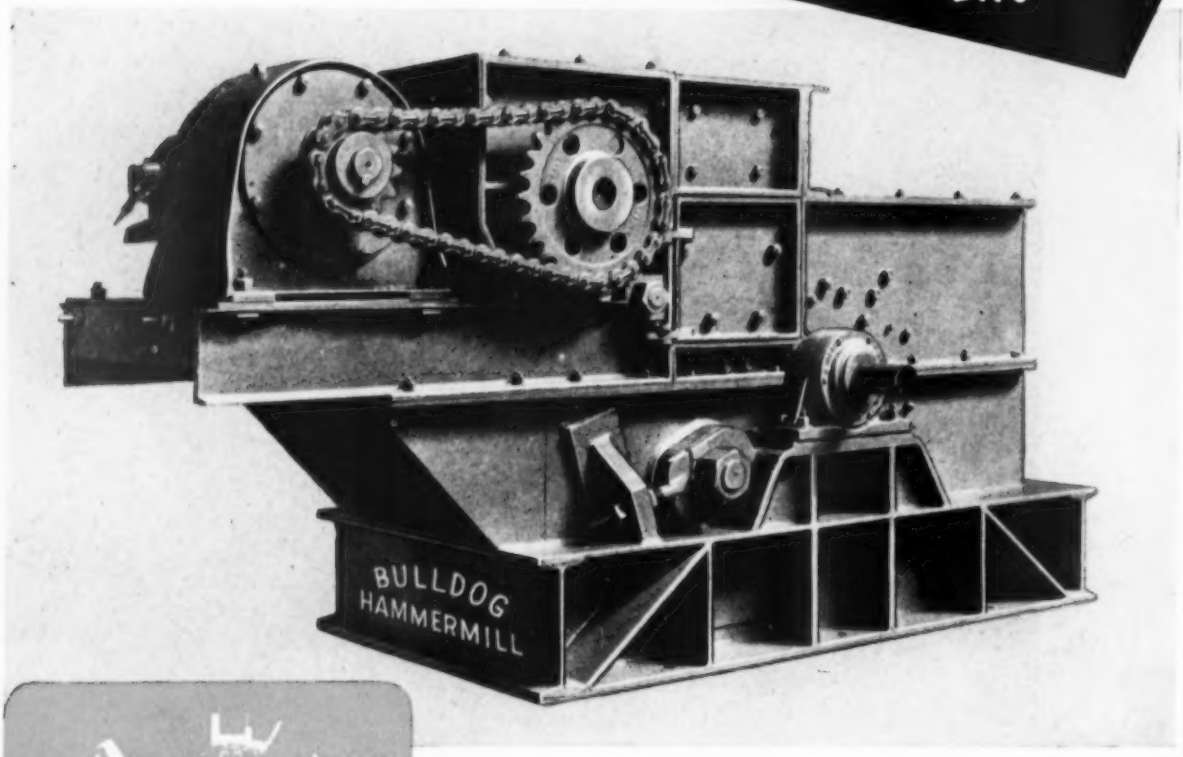
BULLDOG HAMMERMILLS

Assure Rock Plants.....

Twice the Capacity with 15 Times Longer Hammer Life*



STATIONARY BREAKER PLATE TYPE FEATURES
PETTIBONE Manganese Steel Hammers, Liners, Cage Bars, and Adjustable Breaker Plate
1 TO 1000 TONS PER HOUR CAPACITY

*ASK FOR PROOF OF MONEY-SAVING USES FOR PRIMARY, SECONDARY AND FINE REDUCTION

No hammermill offers as much production and operating efficiency as the BULLDOG! That's why operators who have checked them all know the BULLDOG'S exclusive non-clog feature of the Moving Breaker Plate reduces slow-downs and costly maintenance for high moisture materials. The Stationary Breaker Plate has no equal for dry materials. The BULLDOG Hammermill has the greatest hammer life of any hammermill. Write for Bulletin A today.

HAMMERMILLS, INC.

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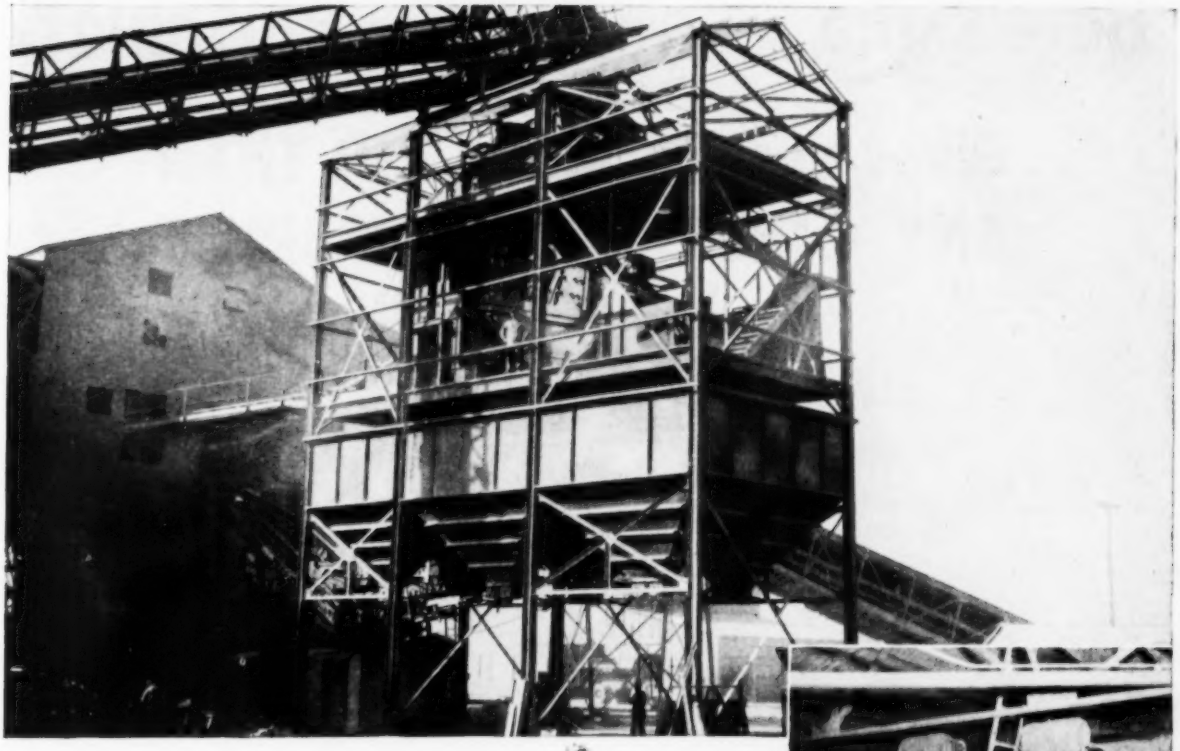
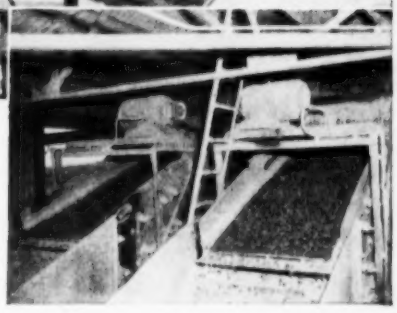
Subsidiary of PETTIBONE MULLIKEN CORP.





New Fines Mill at Buffalo Crushed Stone equipped with 4 Double-Deck 4′ x 14′ Deisters

Four new Type UHS Deister Heavy Duty Vibrating Screens have increased the output of fine sizes (½", ¼", ⅛" and 14 mesh) by 100 to 125 tons per hour at the Bowmansville, New York, plant of the Buffalo Crushed Stone Corporation.

Installed in the new fines mill, these screens have relieved the main screening plant which has improved gradations to meet the New York State specifications for Concrete and Bituminous Material.

Plant Superintendent Paul Leto and Milo Crouse, Manager of Operations, are very proud of the performance of this new installation.

Here are a few of the outstanding features of Deister Heavy Duty Type UHS Screens that make many users "repeat order" customers: *life-time unitized vibrating mechanism; opposed elliptical throw* for greater speed and efficiency in sizing; *divided interchangeable screening sections* to distribute normal wear and prolong life of screening medium.

(Top) Photo of New Fines Mill before it was covered, showing four Deister Type UHS Vibrating Screens as installed on upper and lower levels.

(Center) Upper floor of Buffalo's New Fines Mill, showing two 4′ x 14′ double-deck Deister Heavy-Duty UHS Vibrating Screens, with ½" screen cloth on top deck and ¼" on bottom deck. Type UHS Screens are available in 3′, 4′, 5′ widths; 10′, 12′, 14′ lengths; single-, double-, and triple-deck.

(Below) Exterior view of New Fines Mill at Bowmansville plant.

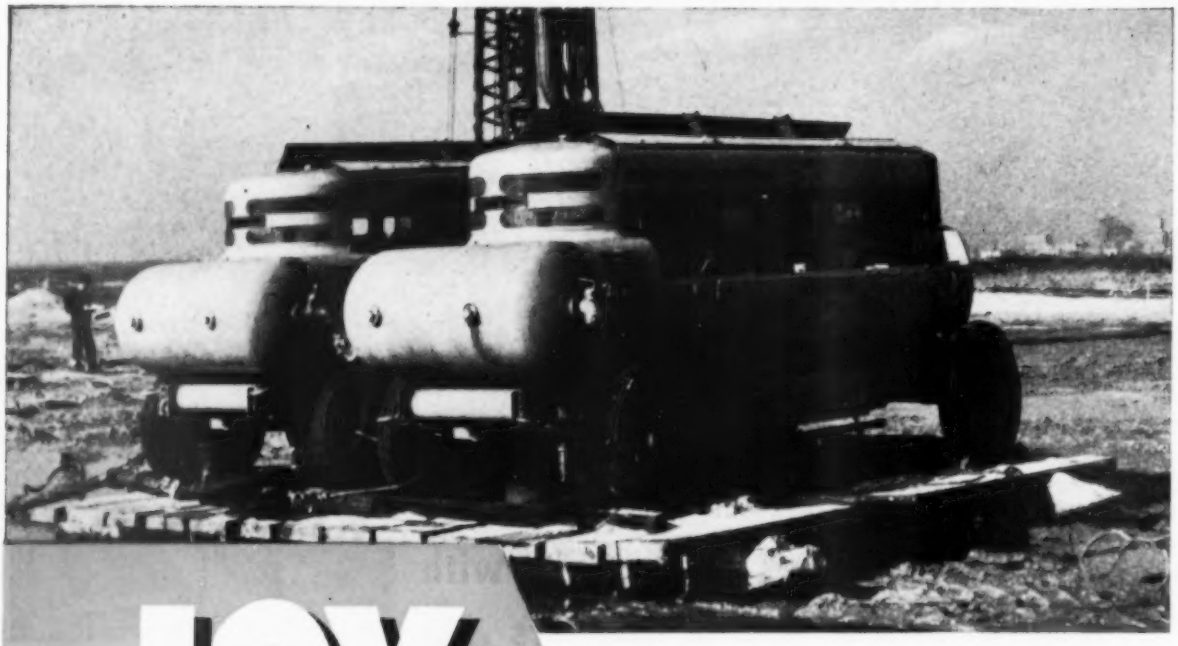
DEISTER

DEISTER MACHINE COMPANY

1933 EAST WAYNE STREET, FORT WAYNE 4, INDIANA

Here's the BIGGEST Portable!

Gives you 5% MORE AIR THAN ANY OTHER ON THE MARKET



JOY "630"

The Joy "630" is a *big* portable—output is 630 CFM—but it's designed for real portability. Light in weight, compact and rugged, the "630" is actually smaller than many other units of less capacity.

The Joy "630" is a completely self-contained compressed-air plant. Electric starter, full force-feed lubrication, "Cascade" oil cooling, two-stage compression, and many other advanced engineering developments enable it to out-produce all others. You'll find the Joy "630" a bear for work—it will operate *two* 4" wagon drills—and you'll find it able to cope with your heaviest air requirements. ● Write for Bulletin GG-1P. **Joy Manufacturing Company, Oliver Bldg., Pittsburgh 22, Pa.** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

WBO C4633

Consult a Joy Engineer

JOY

CONSTRUCTION EQUIPMENT MANUFACTURERS FOR OVER HALF A CENTURY

What's behind the man in the truck cab?

A GALION ALLSTEEL HYDRAULIC HOIST AND DUMP BODY, OF COURSE!

Galion Model 770 hydraulic hoist with steel subframe engineered for loads up to 14 tons.

A Galion dump body, operated by a Galion hydraulic hoist behind your driver's cab, means that your job will begin on time, continue steadily and earn you greater profits.

Galion Allsteel manufactures a complete line of standard and heavy duty hoists and dump bodies from 3 to 27 ton capacities to meet every need. And, if you need extra heavy duty or special units to fill unusual requirements, Galion Allsteel will be happy to design and build them for you.

A-8824

Trailer dump with 16 yd. sides and 20 yd. ends, semi-bay front with 7", 3 stage twin telescopic hoist.

Galion Model 700 hydraulic hoist with Model 12 contractors body — a rugged combination for 6½ to 9½ ton capacity.

See your Galion distributor and have him put a GALION ALLSTEEL unit behind your truck cab today!

THE **GALION** ALLSTEEL BODY COMPANY • GALION, OHIO

Why V-Belts with CONCAVE SIDES Last Longer!

(U.S. PAT. NO. 1913698)

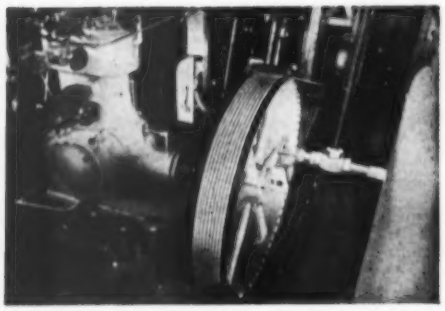
Prove this yourself!

Take any *straight-sided* V-Belt (Fig. 1). Bend it—as it bends in going around a pulley. The sides will at once *bulge out* (Fig. 1-A). Clearly, those bulging sides will press *unevenly* against the V-pulley—and this causes *extra wear* at the points shown by the arrows (Fig. 1-A).

Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2)

Instead of *bulging*, the precisely engineered CONCAVE SIDES merely *fill out* to *fit exactly* in the sheave groove (Fig. 2-A). The sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the *full width* of the Gates Vulco Rope—and this means *longer* belt life and *lower belt costs* for you!

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE Sides—the Gates Vulco Rope!



Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

VULCO ROPE DRIVES

Gates

REG. U.S. PAT. OFF.

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

THE GATES RUBBER COMPANY
DENVER, U.S.A.

keen?

Keen judgement can save you a peck of trouble when it comes to picking the right line of lubricants ... and top mining men, throughout the country, with a keen eye for increased production and fewer machinery repairs, have chosen the complete Cities Service Line. Find out about the super-performance of Cities Service Lubricants and take advantage of the free services of an expert Cities Service Lubrication Engineer. Write Cities Service Oil Company, Dept. A21, Sixty Wall Tower, New York 5, New York.

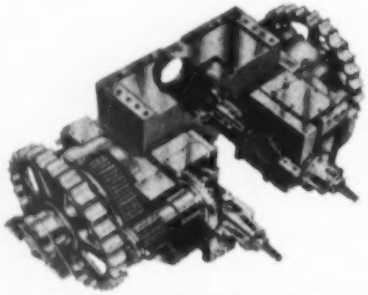
CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

THE EIMCO 105 FINAL DRIVE

Eimco's final drive assembly is just one of the new and exclusive features of the new Eimco 105. The Eimco final drive is a rugged heavy-duty assembly made of heavy alloy steel shafts and gears and encased in heavy alloy steel cast housings. The design permits easy access to gearing through side plates. The anti-friction bearings are assembled in cages for perfect fits and longer life.

Notice the absence of troublesome clutches, brakes and gadgets in this sturdy assembly.



Eimco 105 Tractor Excavator is a new heavy-duty machine, thoroughly tested in the field, with all desirable features for a modern prime mover.

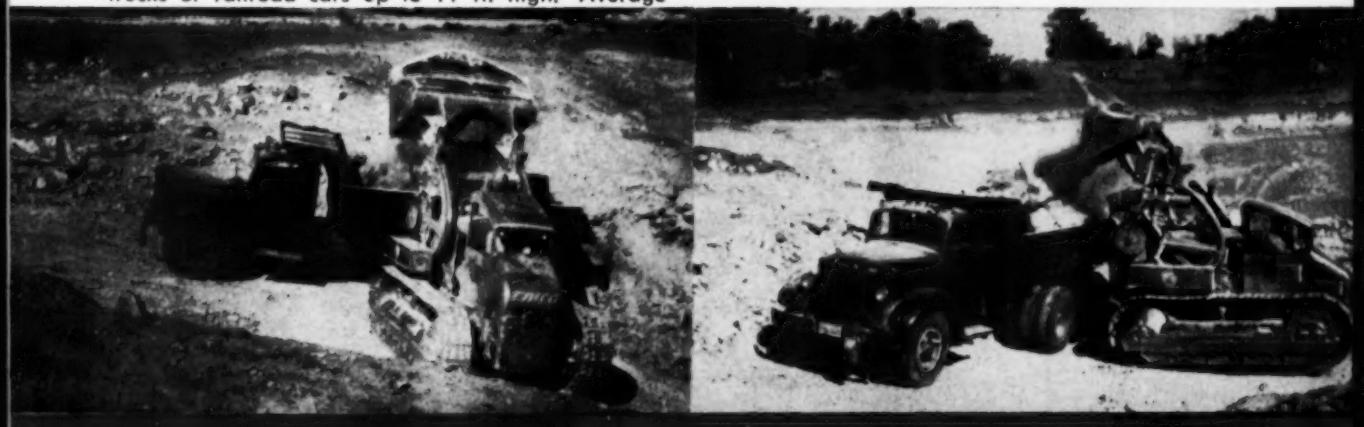
The 105 is a complete departure from ordinary tractor design in appearance and arrangement. The design features permit stronger construction, easier service when necessary and many other operating advantages such as:

1. Freedom from "leveritis" on the pulling and pushing of numerous hand levers, foot clutches, hand brake levers for steering and the necessity of stopping to change speeds or directions. With the 105 you use two small levers (one for each track) that can be held by one hand to give you forward motion — instant reverse or any degree of turn from "spin" turn to "feathered" turn. You can move the speed changing lever from one position to another while in motion under full load.

2. Full track oscillation even with attachments such as the Eimco loader.

3. Controlled loading speed through the Eimco two-speed bucket discharge mechanism. Easy light truck loading in low speed.

(Above right): Eimco 105 excavating material in pit with uneven bottom. This type of digging and loading is impossible with any other economical type equipment. (Above left): Fast moving 105 backs across to place bucket full of rock in truck which is parked on even spot in pit. (Below): The Eimco 105 can load trucks or railroad cars up to 11 ft. high. Average loading speed is 6 - 10 yards per minute in rock. Illustration on opposite page: The Eimco 105 shown here is loading a large truck from the end on a grade of approximately 20%. Two speed loading mechanism (exclusive on Eimcos) permits throwing load all the way back in this type of loading.



THE EIMCO CORPORATION

Salt Lake City, Utah, U.S.A.
Export Office: Eimco Bldg., 52 South St., New York City

B-3

4. Complete visibility with the operator well up front where he can see what's going on.

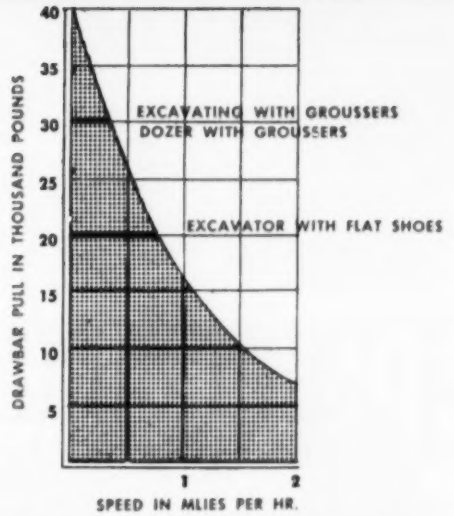
5. Greater production because of its easy handling and greater maneuverability.

6. Clutches never require adjustment.

Dependable operation is always a feature of Eimco equipment and in this the Eimco 105 is no exception. We have tried this machine under operating conditions where in a few short hours it has been subjected to more abuse than a high speed contractor can deal out in a month. The 105 can take it.

This rugged construction of the 105 was carefully planned. Every part has been designed for strength. Castings are all alloy steel. Wearing parts have been very carefully heat-treated. Machining tolerances have been held to rigid standards.

In addition to this, new designs have been incorporated in many of the individual pieces in order to give them greater strength, easier accessibility and in many cases to assure many years of operation with absolutely no attention except normal lubrication.

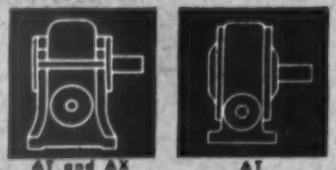


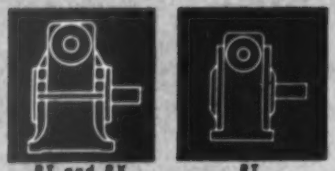
Drawbar pull charts based on preliminary tests showing relative comparisons.

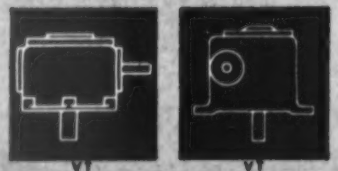
You can TAKE YOUR CHOICE

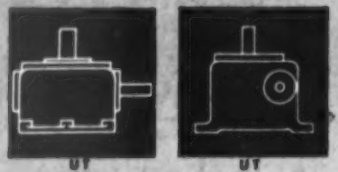
SINGLE REDUCTION

Heavy Duty | Small Units









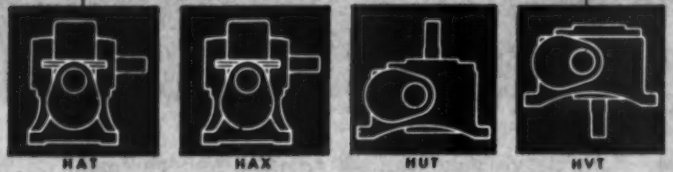
. . . they're all Philadelphia Worm Gear Speed Reducers

Philadelphia Worm Gear Speed Reducers vary in size and arrangement, but never in quality. Each unit is backed by 60 years of gear making experience and our reputation for the best in power transmission equipment.

Standard worm gear reducers are available in ratings to 250 horsepower, and ratios 3½:1 to 6300:1.

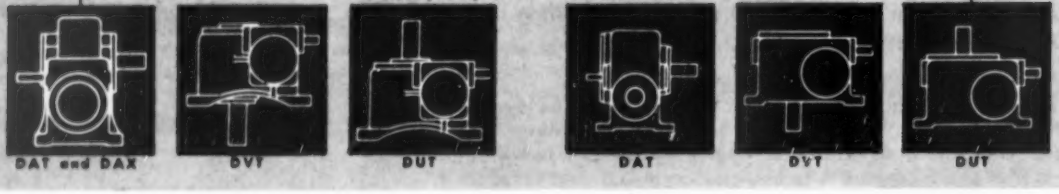
For full information on Worm Gear Speed Reducers, write for catalog WG51.

HELICAL WORM UNITS



DOUBLE REDUCTION

←Heavy Duty | Small Units→



Philadelphia Gear Works, INC.

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NEW YORK · PITTSBURGH · CHICAGO · HOUSTON · LYNCHBURG, VA.

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

Now available!
Superior insulation featured in new Cyanamid blasting caps

AMERICAN CYANAMID COMPANY
EXPLOSIVES

Cyanamid has for many years been conducting a study of all materials available for blasting cap wire insulation to find one that would offer uniform concentricity—no thin spots. Every type of insulation currently in use has been tested, as have many new materials. Now Cyanamid has an insulation that gives *uniform concentricity*, assures maximum performance!

This new, organosol plastic insulation is applied to wire by a continuous bath method. The wire is dipped in *seven separate baths* and is passed through dies to scrape off excess coating between baths. Each coat is heated to insure perfect set, perfect concentricity. Organosol plastic insulation, because of its uniformity, gives you:

1. **Greater electrical insulation values**
2. **Greater flexibility**
3. **Greater abrasion resistance**
4. **Non-porosity**
5. **Greater moisture resistance**

Color-Coded for Easy, Sure Identification

Instantaneous, copper wire | Instantaneous, iron wire | Standard Delay | Split Second Delay

Capable Field Engineers Are Available At Your Call

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BLASTING ACCESSORIES

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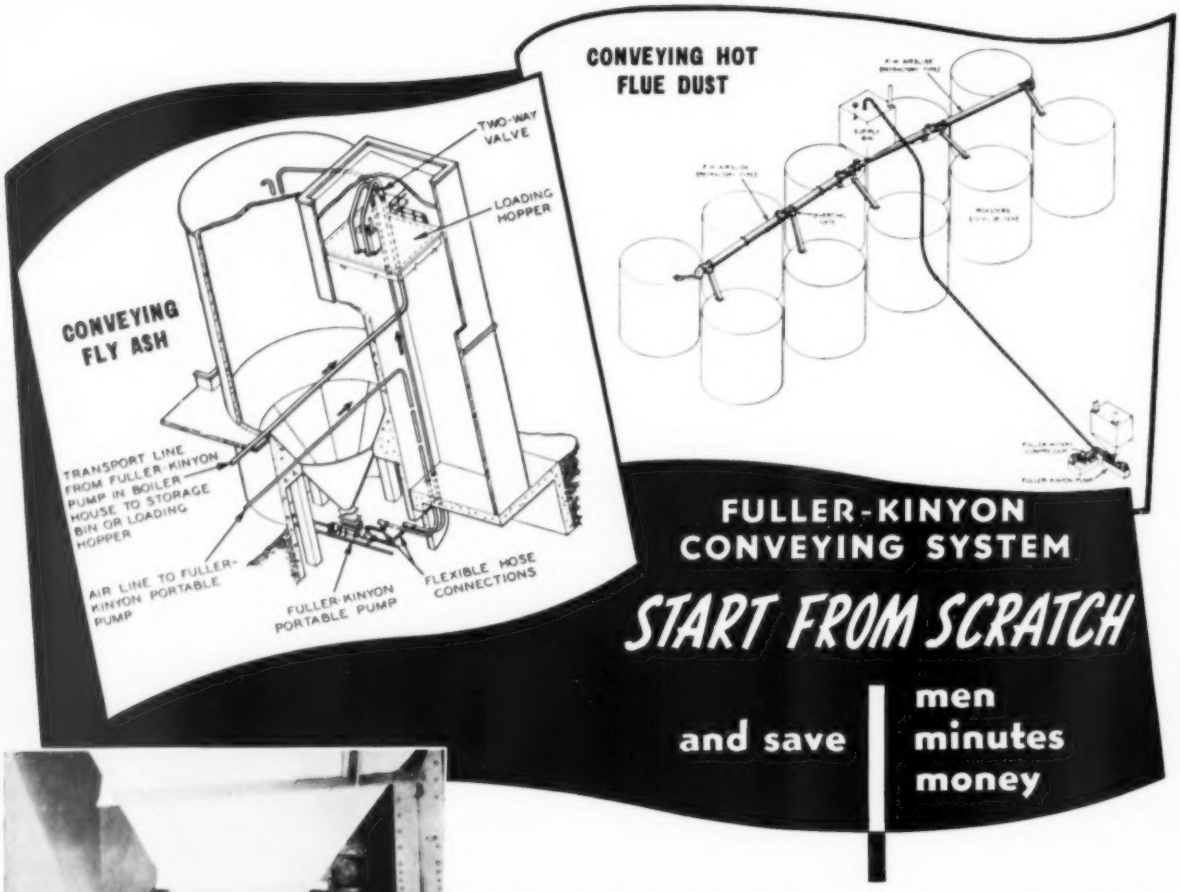
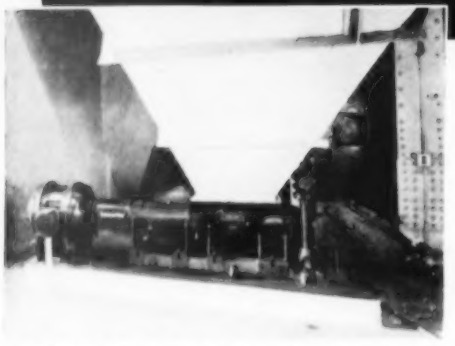
Sales Offices: Pittsburgh, Pa.; Bluefield, W. Va.; Scranton, Pa.; Chicago, Ill.; Pottsville, Pa.; Maynard, Mass.


CONVEYING HOT FLUE DUST
CONVEYING FLY ASH
TWO-WAY VALVE
LOADING HOPPER
TRANSPORT LINE FROM FULLER-KINYON PUMP IN BOILER HOUSE TO STORAGE BIN OR LOADING HOPPER
AIR LINE TO FULLER-KINYON PORTABLE PUMP
FULLER-KINYON PORTABLE PUMP
FLEXIBLE HOSE CONNECTIONS

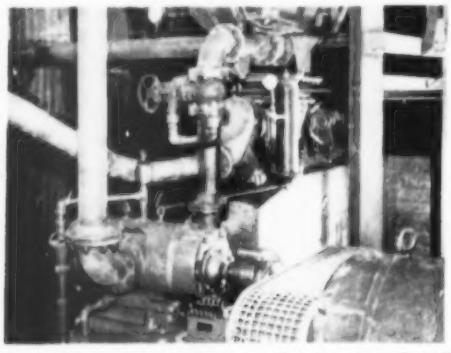
FULLER-KINYON CONVEYING SYSTEM

START FROM SCRATCH

and save | **men** **minutes** **money**



Fuller-Kinyon System handling fly ash in a large central-generating station, from boilers to storage, storage to loading hopper. See drawing upper left.



Fuller-Kinyon System handling hot flue dust from Cottrell precipitator collecting hoppers to supply bin. F-H Airslides convey and distribute uniformly to roasters. See drawing upper right.

The best way to solve any problem of conveying dry pulverized materials is to "Start from Scratch." Get all the facts on pneumatic conveying systems while you are still in the planning stage . . . either when building a new plant or modernizing an old one. Pneumatic conveyors permit economy and convenience in location of buildings and production equipment without the restrictions or straight-line limitations of mechanical conveyors. The layout of the system can be designed to meet the specific requirements of the job, to conform exactly to local conditions, to insure minimum cost for erection, maintenance, and supervision.

Right there is where Fuller comes into the picture. As engineers and builders of four basic types of pneumatic conveying systems, Fuller is able to provide the exact system best suited to individual requirements. Shown are two Fuller-Kinyon Conveying Systems—one for handling fly ash from boilers, the other for hot flue dust from Cottrell precipitators.

Fuller-Kinyon Systems have many advantages: conveying lines can be located anywhere—underground; suspended on simple hangers overhead; vertically; around corners; over long distances; and to practically any number of delivery points. There are no mechanical or explosion hazards. Conveying is clean, fast, and at minimum cost per ton of material handled.

We invite you to have Fuller engineers make a study of your plant plans—investigate conditions and the material to be handled. Then they can make recommendations as to the system best adapted to your needs—enable you to save time, money, and material by having both plant and system built at the same time. To consult them places you under no obligation.

FULLER COMPANY—CATASAUQUA, PA.

Branch offices

Chicago—San Francisco—Los Angeles—Seattle—Birmingham

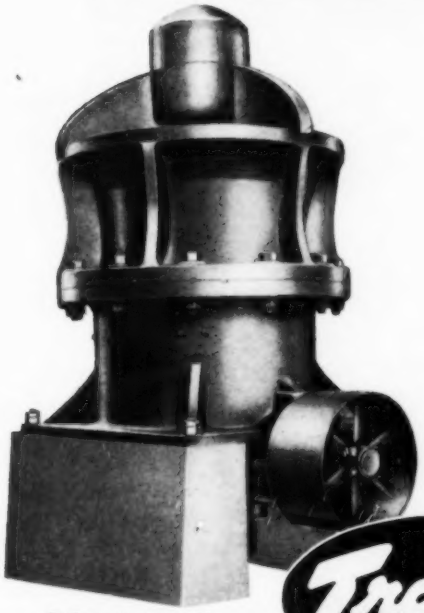
Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS — COMPRESSORS AND VACUUM PUMPS — FEEDERS, AND ASSOCIATED EQUIPMENT

P-149
2112

ENGINEERING SIDELIGHTS OF THE ALVA B. ADAMS TUNNEL: *This is the Eastern outlet portal of the world's longest irrigation tunnel . . . part of the Colorado Big-Thompson Project. The 13.1 mile Adams tunnel carries western waters under the Continental Divide for power and irrigation purposes on the Eastern slopes of the Rockies. Work on this project was begun in 1940 when two crews on opposite sides of the mountains started cutting towards each other through the solid rock. Despite difficulties of working in the thin atmosphere 1 1/2 miles above sea level, men and machines made rapid progress. Accuracy and skill of the engineers were proven four years later when the two crews met at a point 3/4 of a mile under the lofty crest of the Rockies. A 25-cent piece would have covered the difference in their courses . . . another tribute to the accuracy and achievement of modern engineering.*

Modern Engineering in Traylor TY Gyratory Crushers Means More Uniform Products at Lower Costs to You

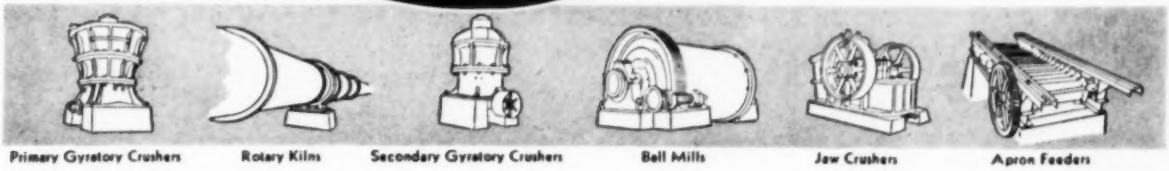


Built in six sizes with feed openings from 3" x 22".

Traylor engineers and producers in the field constantly work toward a common objective . . . more efficient production at lower cost. Traylor TY Gyratory Crushers help you accomplish that objective. The extra large feed opening of Traylor's non-chokable Bell Head handles larger rocks than any other secondary crusher. Traylor's original curved crushing surfaces apply power as a direct crushing force . . . assure a more uniform cubical aggregate on less power per ton. This efficient use of power also reduces wear and replacement costs. See these and other Traylor features in Free Bulletin 7112. Power ratios and capacity data are outlined in detail . . . send for your copy today.

Traylor

TRAYLOR ENGINEERING & MFG. CO.
606 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York • Chicago • San Francisco
CANADIAN MFRS: Canadian Vickers, Ltd., Montreal, P.Q.



Primary Gyratory Crushers | Rotary Kilns | Secondary Gyratory Crushers | Ball Mills | Jaw Crushers | Apron Feeders

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sharp teeth that really dig

H&L TOOTH COMPANY

(Pioneer Manufacturers of Two-Part Teeth)

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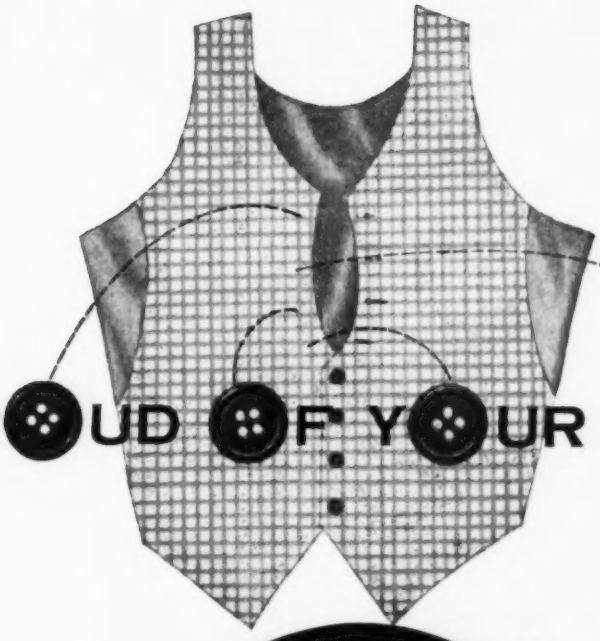

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Prove it with CHASE MULTIWALL Paper Bags

Prove it to Your Distributors and Dealers...

Prove it to Your Consumers

Prove it to Your Balance Sheet

Are you proud of the high quality of your rock products?

You *can* give *visible* evidence of superiority by packaging in CHASE Multiwall bags. This *preferred* bag is backed by 107 years of CHASE experience...experience in developing the finest material and workmanship...experience in fine printing...experience in Multiwall bag manufacture that assures CHASE customers of QUALITY bags on every order.

IT'S THE PACKAGE THAT GIVES YOU THESE EXTRAS...

1. Better appearance.
2. Clean, colorful brand printing.
3. More sales appeal.
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SINCE 1847

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from the mines...

to every form of manufacture

View shows the MS *"CITY OF QUITO"*, one of the many seagoing vessels dependably powered by NORDBERG DIESEL ENGINES.

ZINC

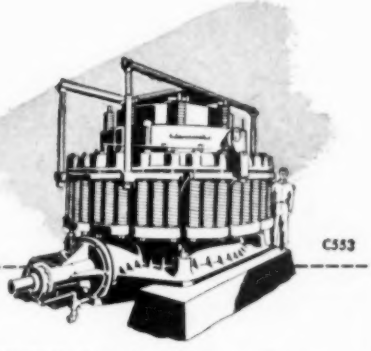
proves its usefulness to man...

Virtually unknown to ancient man, the constantly increasing use of zinc has played an important role in the development of modern civilization . . . on land, from pharmaceuticals to transportation equipment, on through the electrical and telephone industries . . . at sea, from navigational equipment to the many forms of corrosion protection necessary to guard vessels against the elements . . . and in thousands of other applications touching almost every conceivable industry and product, and making our lives better as a result.

In the production of zinc, *as in all of the great ore and industrial mineral operations the world over,* Symons® Cone Crushers have aided in civilization's requirements by making possible increased production to meet growing demands, and by reducing the cost of this production through more efficient crushing operations.

SYMONS . . . A REGISTERED NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD

NORDBERG MFG. CO., Milwaukee, Wisconsin



C353

SYMONS Cone Crushers . . . the machines that revolutionized crushing practice . . . are built in Standard, Short Head, and Intermediate types, with crushing heads from 22 inches to 7 feet in diameter—in capacities from 6 to 900 tons per hour.

SYMONS GYRATORY CRUSHERS

GRINDING MILLS

MINE HOISTS

SYMONS VIBRATING BAR GRIZZLIES and SCREENS

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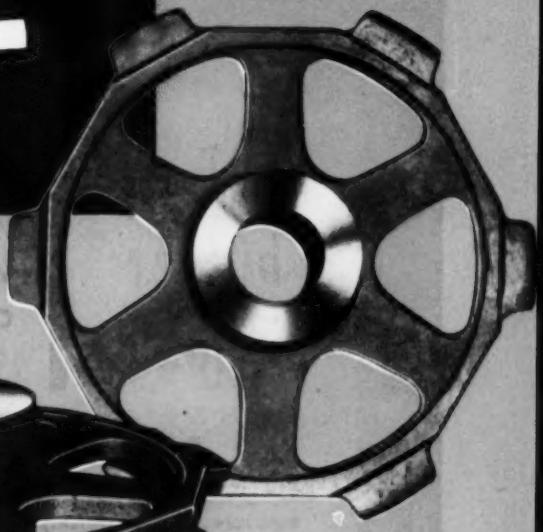
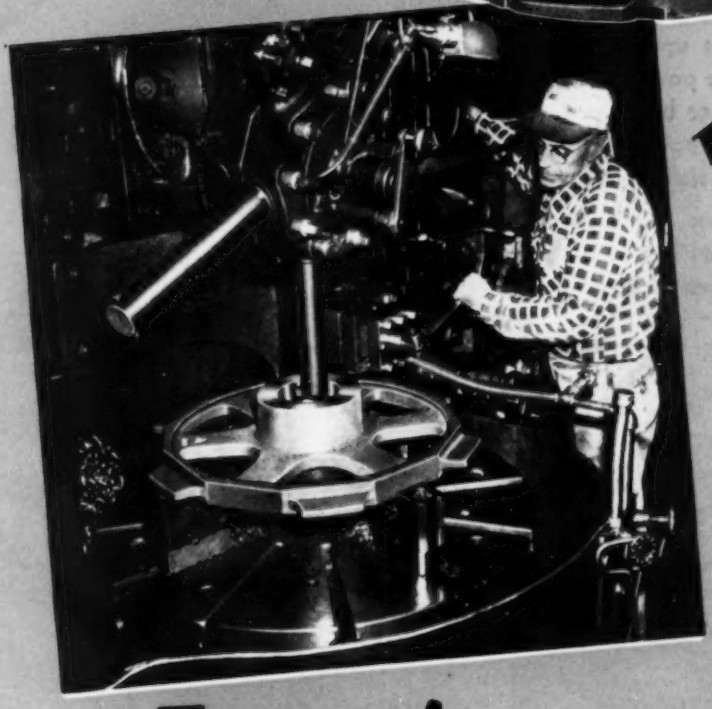
FARRELL-CHEEK SPROCKETS





✓ WEAR-RESISTANT

✓ ACCURATE

✓ DURABLE

✓ RIGID

Finest Name in Cast Steel!

FARRELL-CHEEK STEEL CO.

MANUFACTURERS OF HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

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FARRELL'S HARD EDGE STEEL CASTINGS
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Carbon and Alloy Steels Machined, Hardened, Ground.
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"True Tooth" Gears and Pinions, Sheaves and Wheels
SPECIALIZED CASTINGS
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STOKER PARTS
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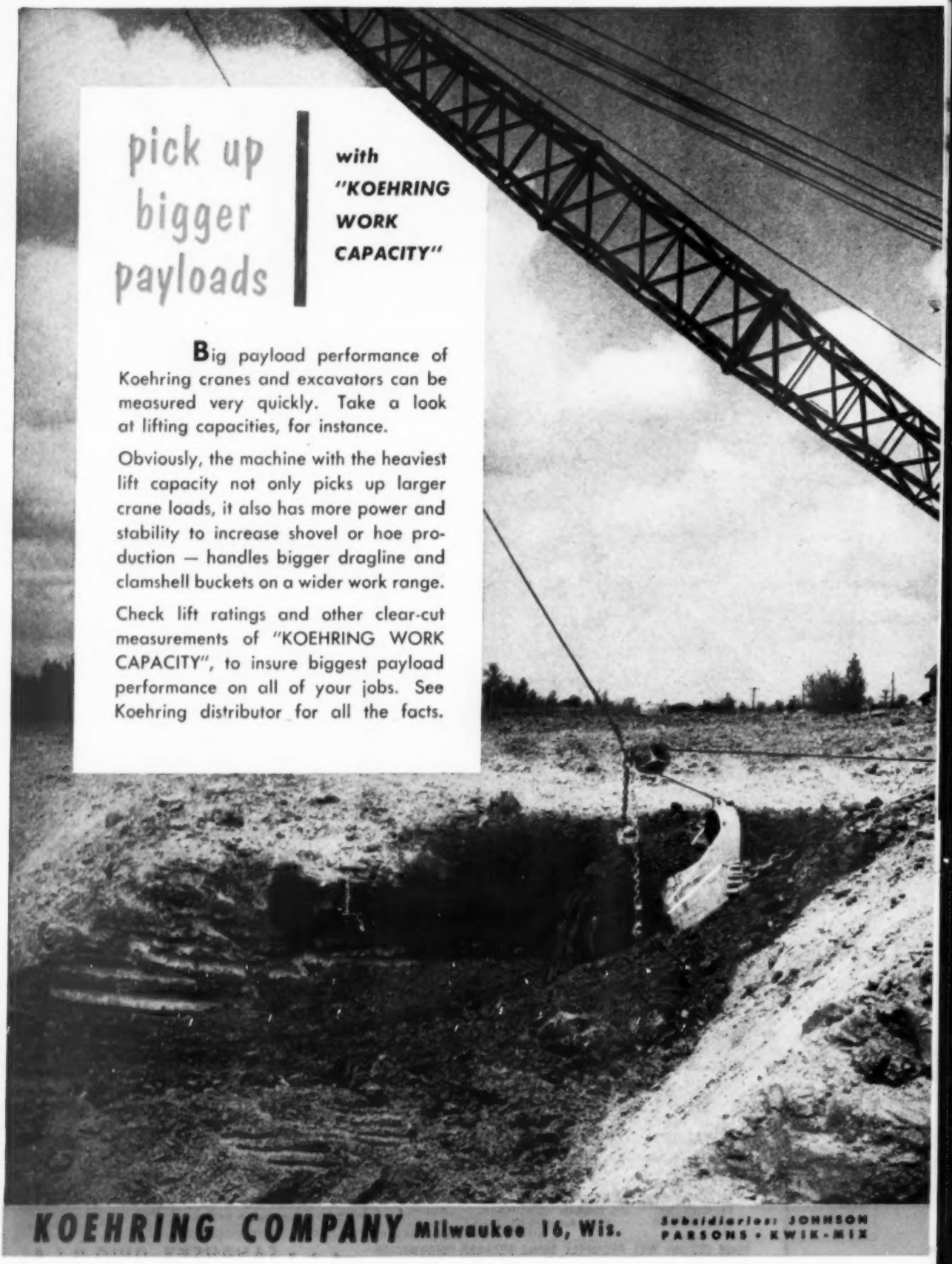
HEAVY HARDWARE
Wire Rope Fittings, Choker Hooks, Bar Benders, Cutters

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

• • • SANDUSKY, OHIO U.S.A.


pick up bigger payloads
with "KOEHRING WORK CAPACITY"
Big payload performance of Koehring cranes and excavators can be measured very quickly. Take a look at lifting capacities, for instance.
Obviously, the machine with the heaviest lift capacity not only picks up larger crane loads, it also has more power and stability to increase shovel or hoe production — handles bigger dragline and clamshell buckets on a wider work range.
Check lift ratings and other clear-cut measurements of "KOEHRING WORK CAPACITY", to insure biggest payload performance on all of your jobs. See Koehring distributor for all the facts.
KOEHRING COMPANY Milwaukee 16, Wis.
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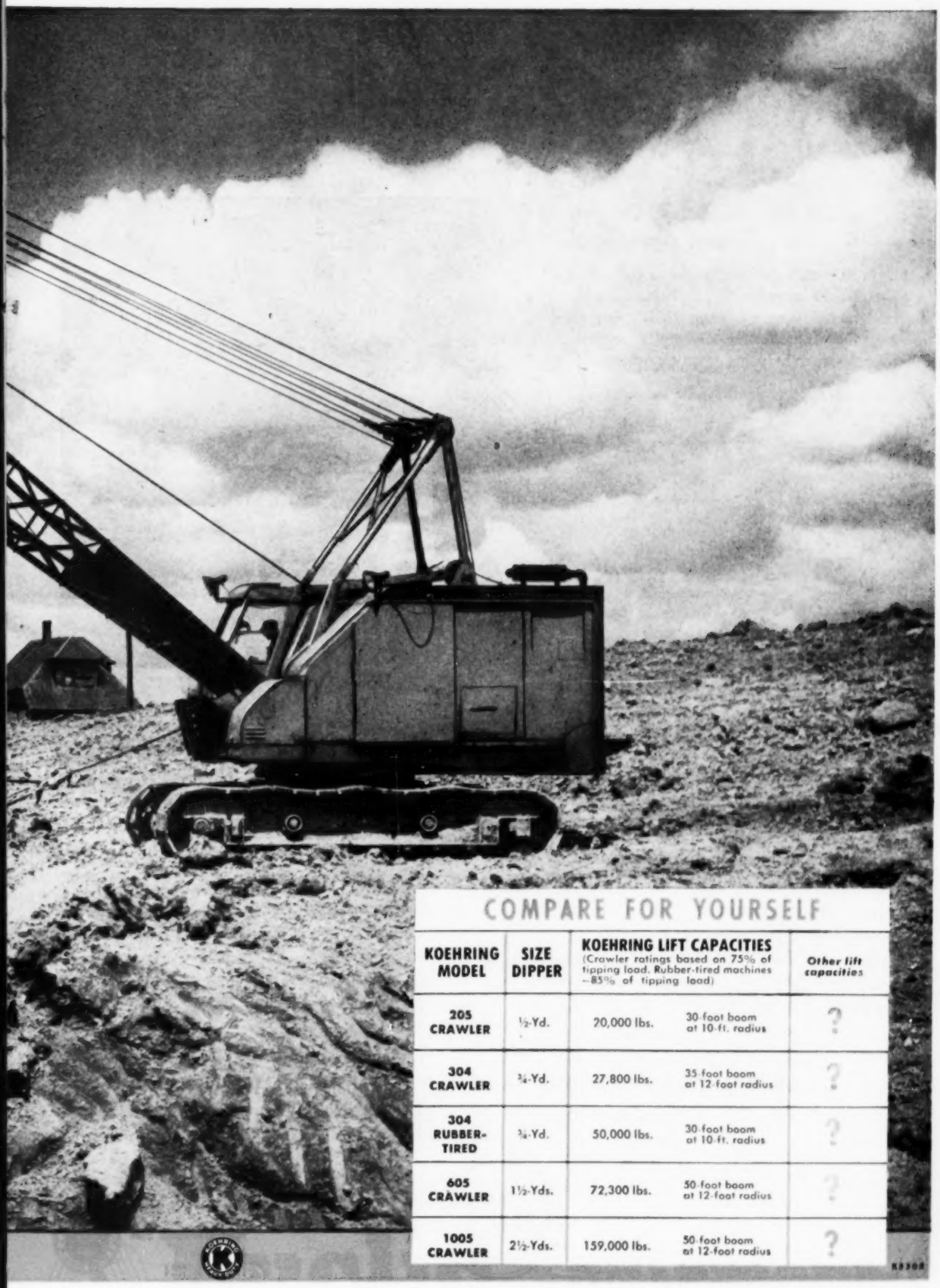


COMPARE FOR YOURSELF

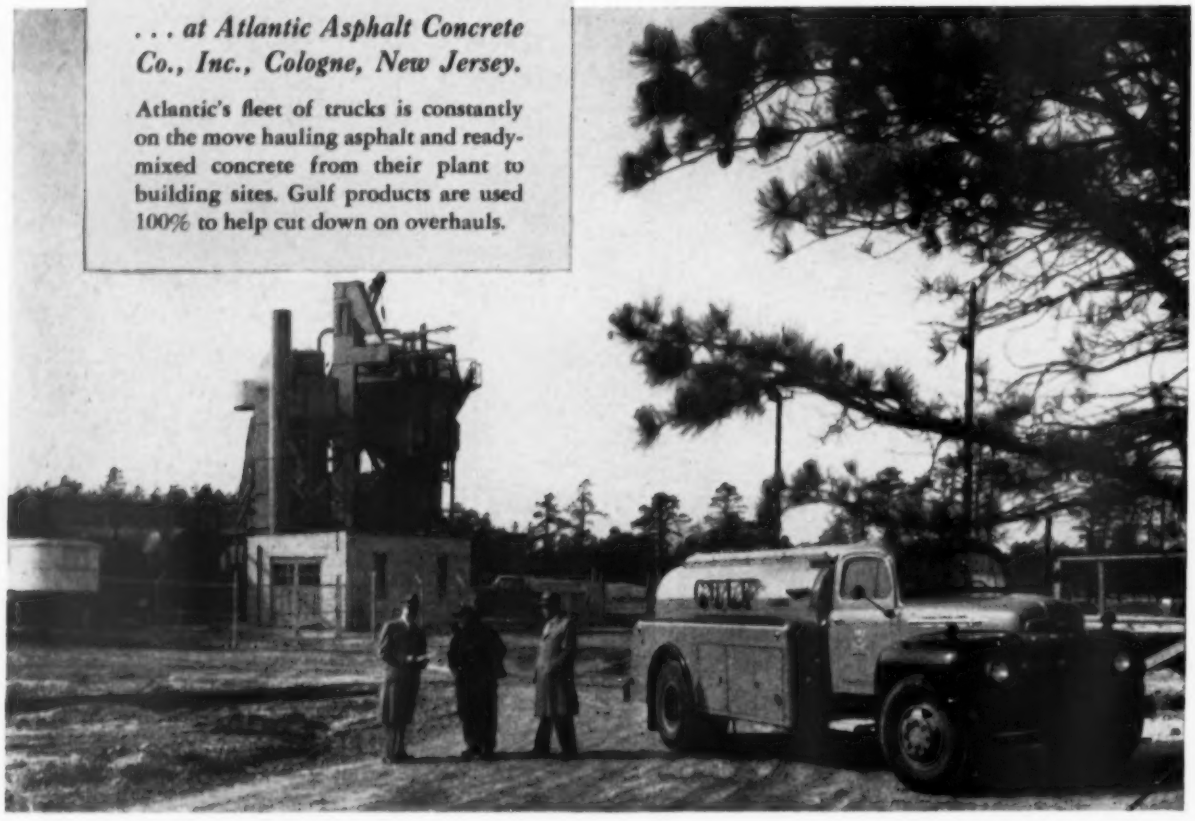
KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines ~85% of tipping load)		*Other lift capacities*
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-foot radius	?
304 RUBBER-TIRED	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-foot radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-foot radius	?

more hauls—fewer overhauls

with Gulf Quality Lubricants *and* Fuels

. . . at Atlantic Asphalt Concrete Co., Inc., Cologne, New Jersey.

Atlantic's fleet of trucks is constantly on the move hauling asphalt and ready-mixed concrete from their plant to building sites. Gulf products are used 100% to help cut down on overhauls.



Working as a team, Gulf lubricants and fuels help many companies, such as Atlantic Asphalt Concrete, obtain greater availability of equipment and lower maintenance costs.

Gulf quality motor oils keep rings clean and free and prevent excessive wear—extend mileage between overhauls. Gulf fuels burn evenly and completely with fewer engine deposits.

Gulf lubricants and fuels, as well as Gulf's fine service, are available to you in 31 states from Maine to New Mexico. Give us a chance to prove how Gulf products help you get better and longer service from your equipment. Call your nearest Gulf office now.

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January 31-
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"Eucs" SURE DO THE JOB!

Euclid Scrapers—12, 15.5 and 18 cu. yds. struck...190 to 400 h.p. engines... top speeds, loaded to 30 m.p.h.

Bottom-Dump Euclids—13, 17 and 25 cu. yds.... 190 to 300 h.p...top speeds loaded to 35 m.p.h.

Rear-Dump "Eucs"—10, 15, 22, 34 and 50 tons ...125 to 600 h.p...spring mounted or semi-rigid drive axles...top speeds loaded to 36 m.p.h.

On construction and mining jobs the world over you'll hear owners say, "those 'Eucs' make more money for us and do more work than any equipment we've ever used." Operators, too, like "Eucs" because they're easy to handle and have plenty of what it takes to haul and dump big loads in tough going.

There are lots of reasons why men who know earth moving equipment specify Euclids, but they all add up to one simple fact . . . "Eucs" move more loads per hour at the lowest cost per ton or yard of material moved. Profitable performance on all types of work is proved by the fact that over 60% of all Euclid equipment sold is repeat business from satisfied users.

When competitors are using "Eucs" to move dirt or rock faster and cheaper than you are, you can't afford to pass up the cost cutting advantages you get in Euclid equipment. For the recommendations of a hauling equipment specialist and a production and cost estimate on your job, get in touch with your Euclid distributor . . . there's no cost or the slightest obligation.

EUCLID DIVISION GENERAL MOTORS CORPORATION **Cleveland 17, Ohio**

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

A UNIVERSAL production report to crushing plant operators

Plant Site	Herington, Kansas
Operators	Anderson-Oxandale
Requirements	High tonnage of aggregate to meet state's exacting specification. Frequent moves and changes in product specification required.
Equipment	Universal 3240 Impact Master. Universal portable screening and blending unit.
Type of rock	Dolomite limestone.
Production	Currently they are meeting a difficult specification calling for a large percentage of minus ¼ inch. They are producing up to 150 yards per hour of which 100% passes a one inch screen, 90% passes a ¾ inch screen, 50-60% passes a ¼ inch screen. When desired Anderson-Oxandale can reduce the production of minus ¼ inch material by at least 50%.

Anderson – Oxandale's portable 3240 Impact Master, crushing, screening, blending and loading plant operating near Herington, Kansas.

Anderson — Oxandale had to have a crushing plant that could be moved frequently with a minimum of down time, produce high tonnages of top-quality aggregate at each set-up, and meet exacting specifications. The Universal Impact Master (portable) with *Controlled Impact Action* combined with Universal's portable screening and blending unit was the answer.

The Impact Master, with Controlled Impact Action gives them four important advantages: (1) Greater control of the finished size of your material. (2) Cleaner, more cubical aggregate. (3) Lower operating cost — it requires less horsepower per ton. (4) Lower maintenance cost.

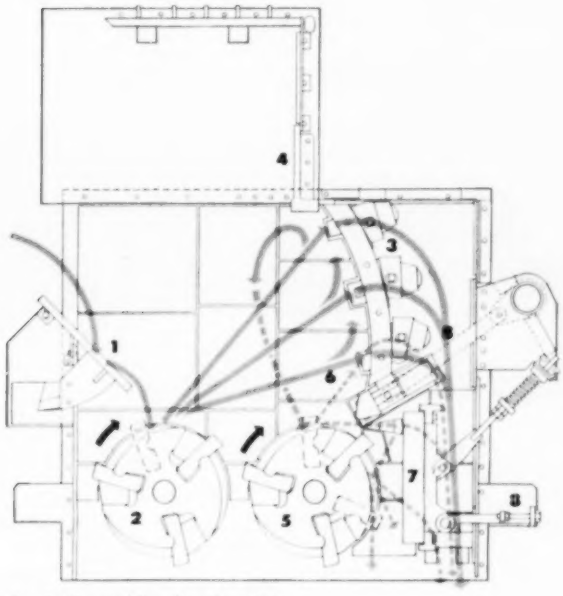
What Is Controlled Impact Action:

Control point 1: Controlled feed chutes the rock into the unobstructed path of the first rotor hammer circle for terrific impact, providing maximum unobstructed penetration. The angle of the plate can be quickly changed to handle rock of different size and density and meet varying quarry conditions. Incoming material penetrates the first rotor hammer circle at the correct angle for efficient breaking. **Control point 2:** you control the range of sizes by simply regulating the speed of the rotor hammers. **Control point 3:** you can easily adjust the stripper bar and lower screen grate to get the percentage of sizes you want.

With these three methods of control, you get what you want. It's no hit or miss proposition. "Controlled Impact Action" is more than a phrase with Universal. It's the key to the way all Universal Impact Masters produce more aggregate of higher quality to exact specification at lower cost.

Portable 3240 Impact Master with 3 speed transmission drive from diesel power mounted to the side. Slide mounted 36" x 16'-0" portable apron feeder. Eighteen inch closed circuit return conveyor from portable screening unit. 30" delivery conveyor to portable screening unit.

Universal portable screening and blending unit. All electric driven with 5' x 14' 3 deck inclined gyrating screen equipped with ball tray. Two 30" forward delivery conveyors and one 18" side delivery conveyor. Positive blending chutes with gates control different aggregate specifications. 18" return conveyor to Impact Master.



1. Adjustable feed plate
2. First rotor hammer
3. Deflector screen grate
4. Feed chute backplate
5. Second rotor hammer
6. Stripper bar
7. Bottom screen grate
8. Adjustments

How the Universal Impact Master works:

The diagram at left shows the flow of material. Adjustable feed (1) chutes the incoming rock into the first rotor hammer circle at proper angle. Rock is hit in motion, exploded into cubical shaped pieces by terrific impact of the rotor hammers, and at the same time hurled toward the deflector screen grate (3) where finished sizes are immediately discharged. Oversize particles are deflected upward, hit the feed chute back plate (4) and drop down into the path of the second rotor hammer circle (5) where they are reduced by impact and projected toward the bottom half of the deflector screen grate and the lower screen grate for immediate discharge. Both rotor hammers rotate toward the discharge opening. Material always flows rapidly in one direction. No grates, screens or bars obstruct the discharge opening. Large expansion chamber is also completely free of obstructions. All breaking is done by impact. There is no attrition, abrasive or grinding action. Thus wear is kept to a minimum.

More and more operators are turning to the Universal Impact Master, with "Controlled Impact Action". Its high production capacity, excellent performance, and simplicity of construction just naturally results in a more efficient, more profitable operation. Tonnages up to 750 tons per hour. Available in sizes: 3240, 3645, 4250 and 5260. Write for complete information today.

UNIVERSAL ENGINEERING CORPORATION

619 C Avenue N.W. Cedar Rapids, Iowa

A subsidiary of Pettibone Mulliken Corporation, Chicago.

UNIVERSAL GAVE CEDAR RAPIDS ITS ORIGINAL FAME FOR QUALITY CRUSHERS **IN CEDAR RAPIDS SINCE 1906**

PMCP **UNIVERSAL**

WHEN IT COMES TO CONVEYOR COMPONENTS

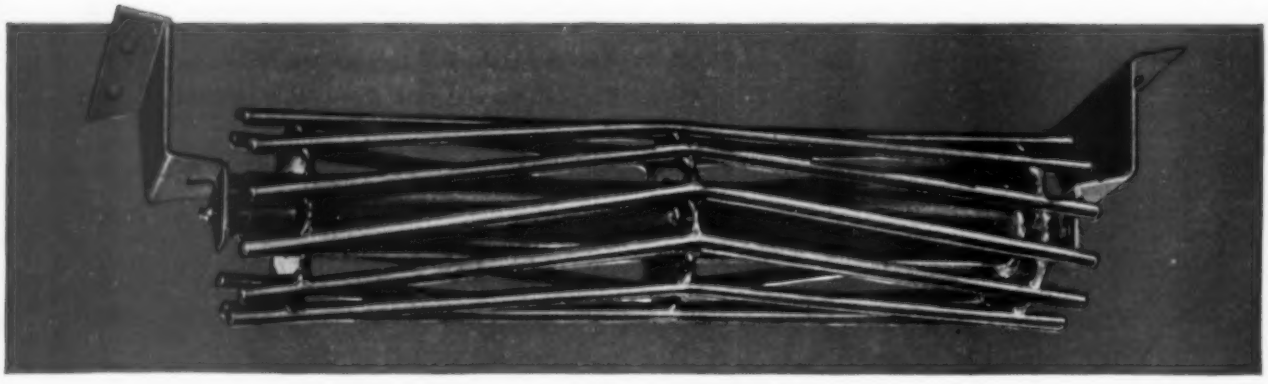
MAKE THE SMART MOVE

...COME TO BARBER-GREENE

Is your conveyor in need of modernization? Are you planning to expand your present system? Does expansion of your business require a new conveyor?

Here, Barber-Greene offers you valuable assistance. Carriers, drives, truss sections, belt, accessories . . . or an entire new system . . . you'll find what you need in the complete Barber-Greene line of conveyor components.

Here are units that are quickly available to improve your materials handling operation. All units are from the complete line of Barber-Greene pre-engineered, standardized Permanent Conveyors. Why not check with your Barber-Greene Distributor —chances are excellent his large stock of conveyor components includes just what you need to revitalize your materials handling system.



EXCLUSIVE BARBER-GREENE CHEVRON ROD RETURN ROLL

A new, patented chevron rod return roll manufactured exclusively by Barber-Greene. For installation on return run of belt. B-G Chevron Rollers are self-cleaning—there is no build-up of material on the roll and consequent uneven and excessive belt wear. Open design eliminates compaction between roller and belt. Gentle slapping action of ½-inch diameter rods dislodges loose material clinging to the belt. Also exerts self-aligning action on belt. 6 inches in diameter. Ball or roller bearings. Sizes for 18, 24, 30, 36, 42, 48-inch belt widths.

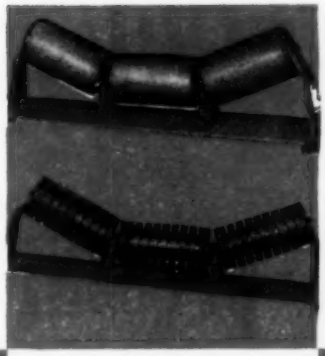
Write for complete catalog

If you operate or plan to operate a conveyor, the complete catalog on Barber-Greene Permanent Conveyor Components belongs in your files. Write for your copy.

see your **B-G distributor** ...or write

CARRIERS FOR EVERY PURPOSE

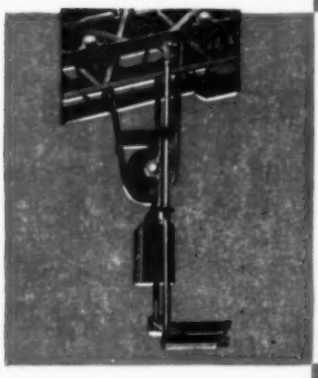
Your conveyor is no more efficient than its carriers. Selection of the kind and type of carrier depends on experience and knowledge. There are B-G carriers for every purpose—all embodying outstanding design and construction features that assure many years of low-cost operation while affording the utmost in belt protection.



BELT HOUSINGS, BELTING

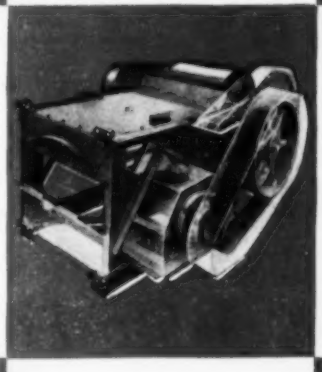
Belt housings. Safeguard against snow, ice, rain, sun and wind. Made of 16-gauge, extra heavy galvanized culvert stock. Sections hinged for inspection. Adjustable supporting clips.

Belting. Superior seamless ply, rubber impregnated duck construction makes belt alignment easy. Heavy-duty rubber covering is extra thick at edges. Widths for all conveyors.



BELT TAKE-UPS

Take-ups maintain belt tension and eliminate slack caused by belt stretching. Gravity types, which include B-G Vertical Gravity Take-ups and Horizontal Gravity Take-ups, provide constant, automatic tension adjustment. B-G protected Screw Take-ups are designed for shorter conveyors. All types have highest grade bearings and all-welded steel frames. Available for belt widths up to 48 inches.



HEAD END AND INTERMEDIATE DRIVES

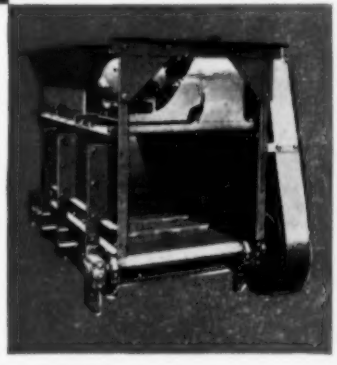
To meet the requirements of any conveyor. Powered by gas, diesel or electric motors in wide range of capacities. Factory assembled package includes motor, speed reducer, pulleys, shafts, bearings and structural steel frame. Accurately aligned, adjusted and lubricated before shipment. Greatly simplifies field erection.

TRUSS OR CHANNEL SECTIONS

B-G pre-engineered and pre-fabricated Steel Truss or Channel Sections mean greater strength, economy, flexibility and faster erection of your conveyor. Available in 12, 24, 42, 60 and 84-inch depths—in lengths of 6, 9, 12, 15, 18 and 21 feet. Supplied with or without walkways. Both types made of welded structural steel.

FEEDERS

B-G Drag Flight Feeder uniformly conveys coal and other non-abrasives from a bin or hopper. No floor supports required . . . easily attached to overhead bin or hopper through top member flange connections of the feeder. Steel chains and bar flights drag material over 5/16" steel pan to discharge end. B-G also supplies reciprocating, belt and apron feeders.

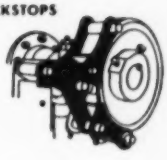


OTHER BARBER-GREENE CONVEYOR ACCESSORIES

BELT SCRAPERS

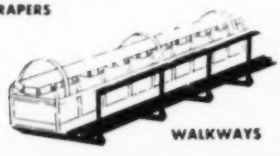
TRACK HOPPERS

SWIVEL SPOUTS



BACKSTOPS

A-FRAMES



WALKWAYS

FEEDING HOPPERS

GRAVITY SCREENS

CONTINUOUS SKIRT BOARDS

275

Barber-Greene

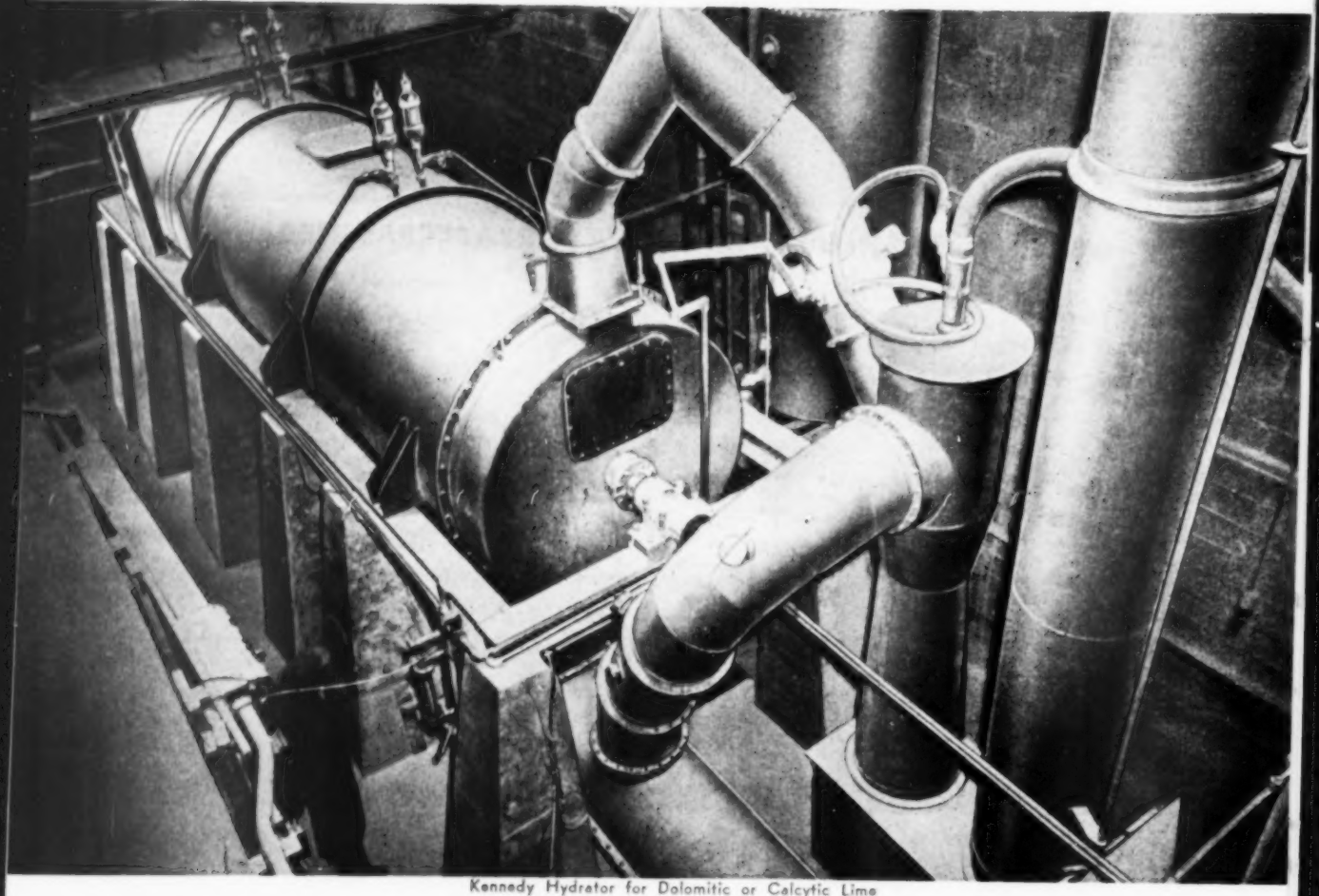
Aurora, Illinois, U. S. A.

Another KENNEDY First!

New type non-pressurized

Continuous Hydrator

Produces high quality, Extremely Uniform Hydrated Calcitic and Dolomitic Lime with Virtually 100% Hydration



Kennedy Hydrator for Dolomitic or Calcytic Lime

A development of far-reaching importance to the entire lime industry. Complete equipment now in operation at Lee Lime Corporation plant, Lee, Mass.

Continuous, non-pressure operation that hydrates virtually 100% of the magnesium content of the feed. Produces exceptionally uniform quality lime, in capacities to suit your requirements.

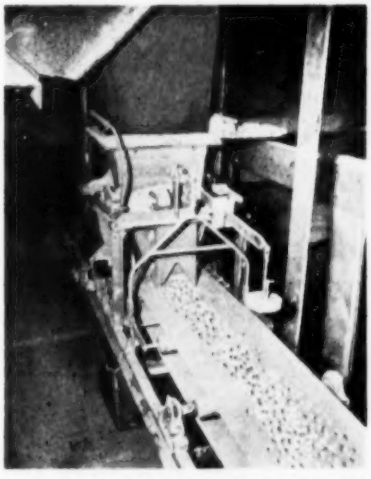
Revolutionary type heat exchanger creates catalytic effect. Lime produced in KVS rotary kiln is fed to hydrator at adjustable rate. Correct proportioning of water is accomplished with the use of control instruments.

The complete system engineered and built to rigid specifications by KVS presents a flexible arrangement of units to fit various plant layouts. Can be readily assembled for use to hydrate either high calcium or dolomite limes.

High-speed mixer at plant of Lee Lime Corporation, Lee, Mass.

OUTSTANDING FEATURES OF THE CONTINUOUS HYDRATOR

- NON-PRESSURE HYDRATION
- VIRTUALLY 100% HYDRATION OF MAGNESIUM OXIDE
- CLOSED CIRCUIT HEAT EXCHANGER
- PLASTICITY OF 350 EMLOY ATTAINED
- CAPACITY TO SUIT YOUR REQUIREMENTS
- 92 TO 95 PERCENT WATER RETENTION IN THE FINISHED PRODUCT
- HYDRATES EITHER HIGH CALCIUM OR DOLOMITIC LIMES
- EXCEPTIONALLY UNIFORM QUALITY
- OVERBURNED OXIDES COMPLETELY HYDRATED
- ONE-MAN OPERATION



Automatic Feeder used in conjunction with Hydrator at Lee Lime Corporation

We invite inquiries regarding this Revolutionary Development

IT COSTS LESS.. TO OWN THE BEST!

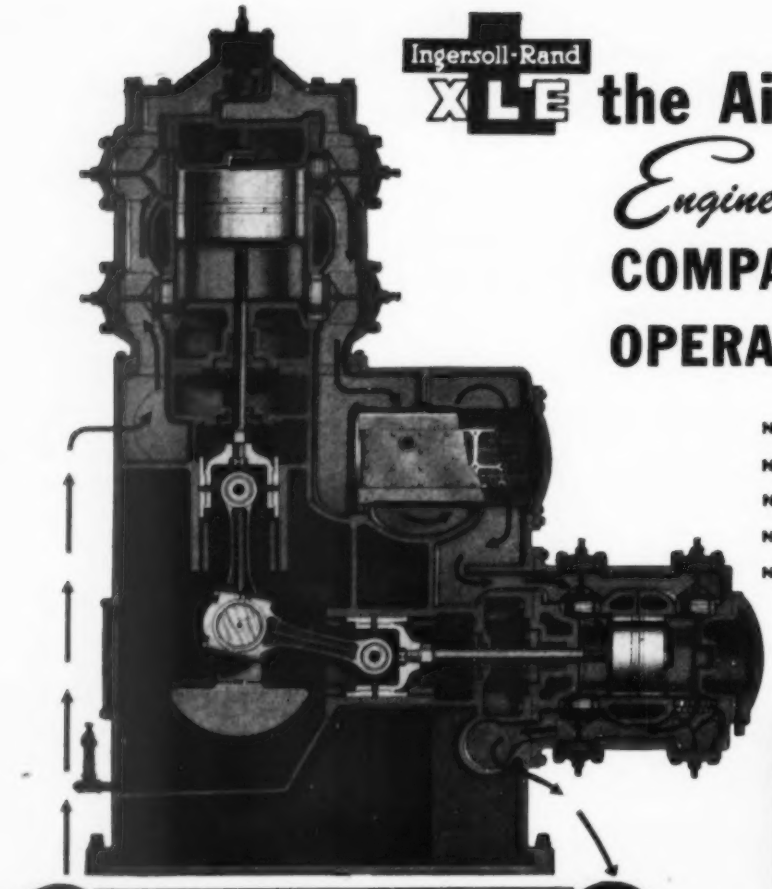
KENNEDY - VAN SAUN
MANUFACTURING & ENGINEERING CORPORATION
TWO PARK AVENUE, NEW YORK
FACTORY **DANVILLE, PA.**

Ingersoll-Rand

XLE the Air Compressor

Engineered for COMPACTNESS AND OPERATING ECONOMY

NEW *Air Flow* DESIGN
NEW *Intercooler* DESIGN
NEW *Cylinder* DESIGN
NEW *Frame and Running Gear* DESIGN
NEW L DESIGN



PIPELESS THRU-FRAME AIR FLOW

Main air connections on the compressor frame eliminate piping strain from the cylinders. Air flow between these two points is entirely within the frame and cylinders. There is no interstage piping. The streamlined frame houses the intercooler and combined with the wide-flanged cylinders provides a sturdy construction that maintains alignment.

Packaged design for minimum floor space, and specially balanced for minimum foundation . . . ideal for skid-mounting.

Easy to operate . . . push button starting, grouped controls, automatic force-feed lubrication, automatic condensate removal, automatic air-operated starting unloaders and capacity control.

Easy to install or relocate . . . ready-to-run, assembled shipment . . . simplified air and water piping.

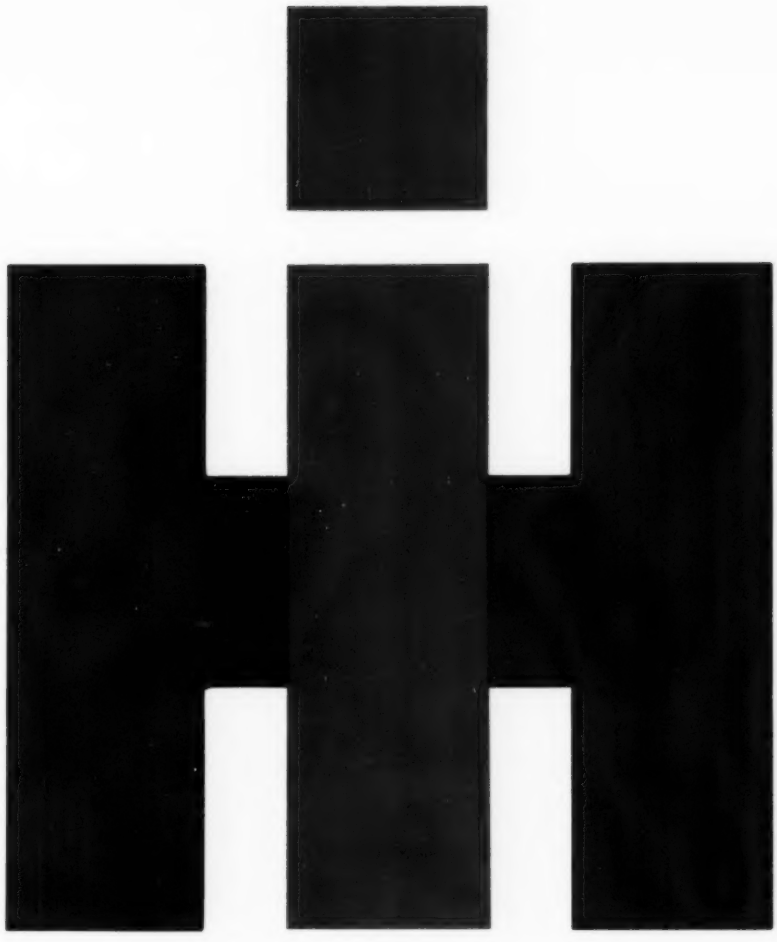
Easy to maintain . . . simplified long-life construction . . . full-floating, cool-running, aluminum-alloy bearings that require no adjustment . . . no need to open the sealed crankcase which stays clean inside . . . streamlined exterior also easy to keep clean.

Low operating costs . . . new high-efficiency, long-life I-R Channel Valves result in compressor efficiency comparable to the largest units . . . durable, high-efficiency tube-and-fin intercooler saves water . . . efficient direct-connected motor.

Built for reliable, continuous full-load service . . . sizes 125, 150, 200, 250, 300, 350 horsepower . . . discharge pressures 80 to 125-psi, two stage . . . write for more information today.

Ingersoll-Rand
11 BROADWAY, NEW YORK 4, N. Y. 688-1

ROCK DRILLS • AIR & ELECTRIC TOOLS • OIL & GAS ENGINES • PUMPS • TURBO BLOWERS

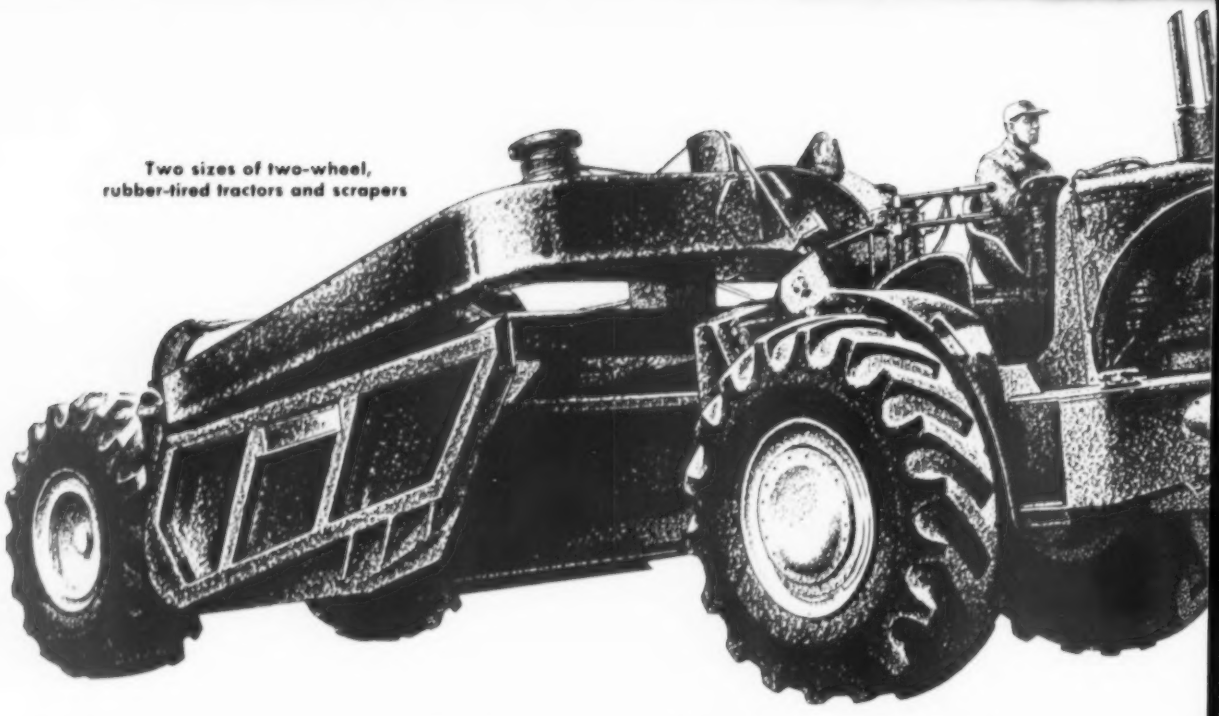


International Harvester and INTERNATIONAL Industrial Distributors present a complete line of modern earthmoving equipment, led by the INTERNATIONAL two-wheel, rubber-tired tractors with scrapers, and by "Big Red," the INTERNATIONAL TD-24, world's most powerful crawler

INTERNATIONAL HARVESTER

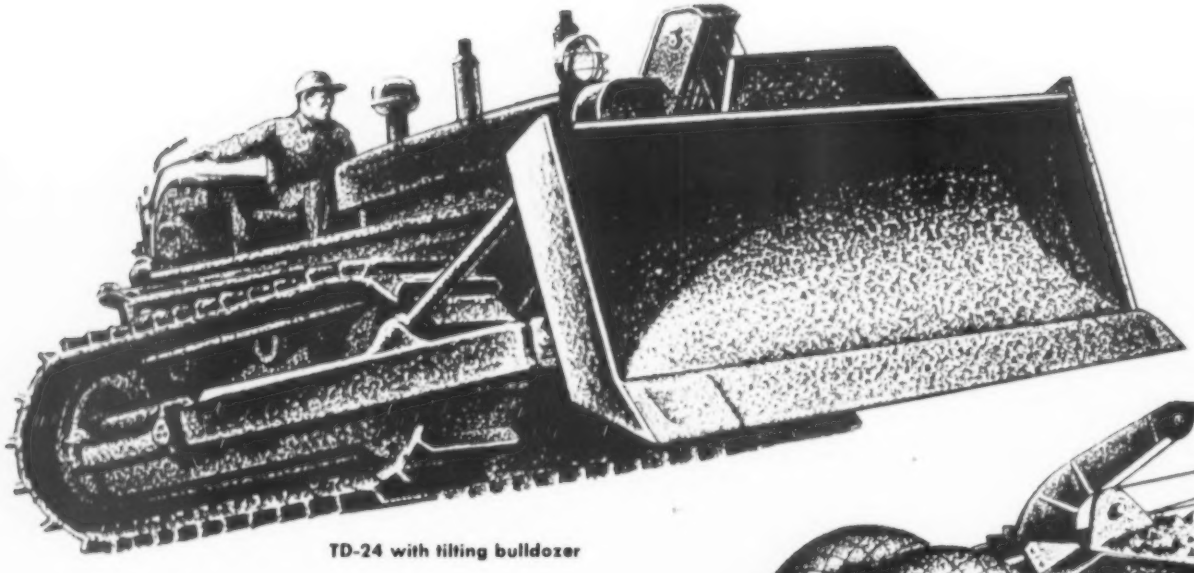
INTERNATIONAL

POWER TO MOVE THE EARTH

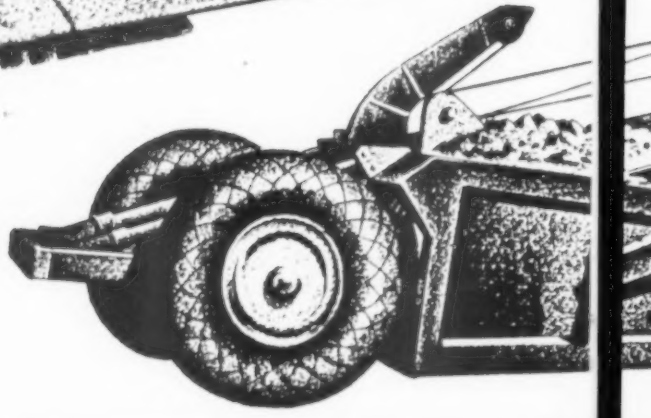


Two sizes of two-wheel, rubber-tired tractors and scrapers

Now a complete earthmoving line that comes in the



TD-24 with tilting bulldozer



Two-wheel, rubber-tired tractor with wagon

Big Red Package

Got a big job to do? Call on INTERNATIONAL'S new Big Red Team!

- Seven rugged crawlers headed by the TD-24—most powerful crawler on the market!
- Twenty-two matching hydraulic and cable-controlled bulldozers and bullgraders, with land-clearing blades available!
- Four 4-wheeled scrapers!
- Two high-speed, two-wheel, rubber-tired tractors with scrapers (13 and 18 heaped-yard capacity)!
- A high-speed, two-wheel, rubber-tired tractor with bottom dump wagon (20 heaped-yard capacity)!

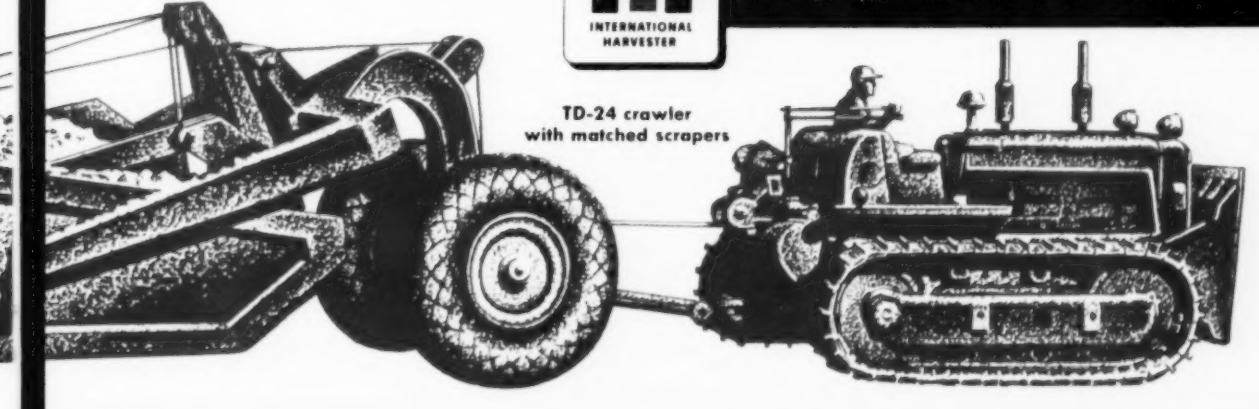
These great machines, now grouped under the INTERNATIONAL banner, have proved their dependability and economy to contractors for years on big projects around the world.

Your INTERNATIONAL Industrial Distributor has the equipment that will help you make a profit on any job you tackle. Call him for full details . . . or for actual demonstrations. See for yourself!

POWER THAT PAYS

INTERNATIONAL HARVESTER

INTERNATIONAL



TD-24 crawler with matched scrapers

Now All in One Family

the hardest-working work teams in the world!

The new INTERNATIONAL team stars not only a full line of rugged red INTERNATIONAL crawlers, complete with INTERNATIONAL scrapers and bulldozers, but also high-speed INTERNATIONAL two-wheel, rubber-tired tractors with scrapers.

This means that now, more than ever, your INTERNATIONAL Industrial Distributor is "Earthmoving Headquarters" for your area. He offers you IH equipment to tackle any job, backed up by unsurpassed service facilities and parts supplies.

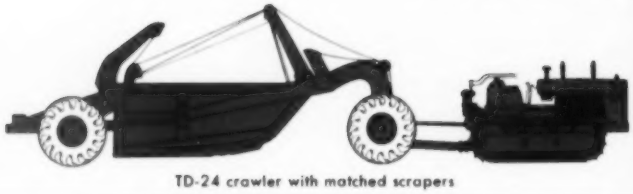
He's at your call, always, to help keep your equipment rolling . . . to cut down your down-time and pile up your profit-time . . . to serve you with INTERNATIONAL "Power that Pays!"

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS



TD-24 crawler with matched scrapers

TD-18A crawler with matched scrapers

TD-24 crawler with bullgrader

TD-14A crawler with cable bullgrader

TD-9 crawler with hydraulic bulldozer

T-9 crawler with hydraulic bullgrader

TD-6 crawler with hydraulic bulldozer

T-6 crawler with hydraulic bullgrader

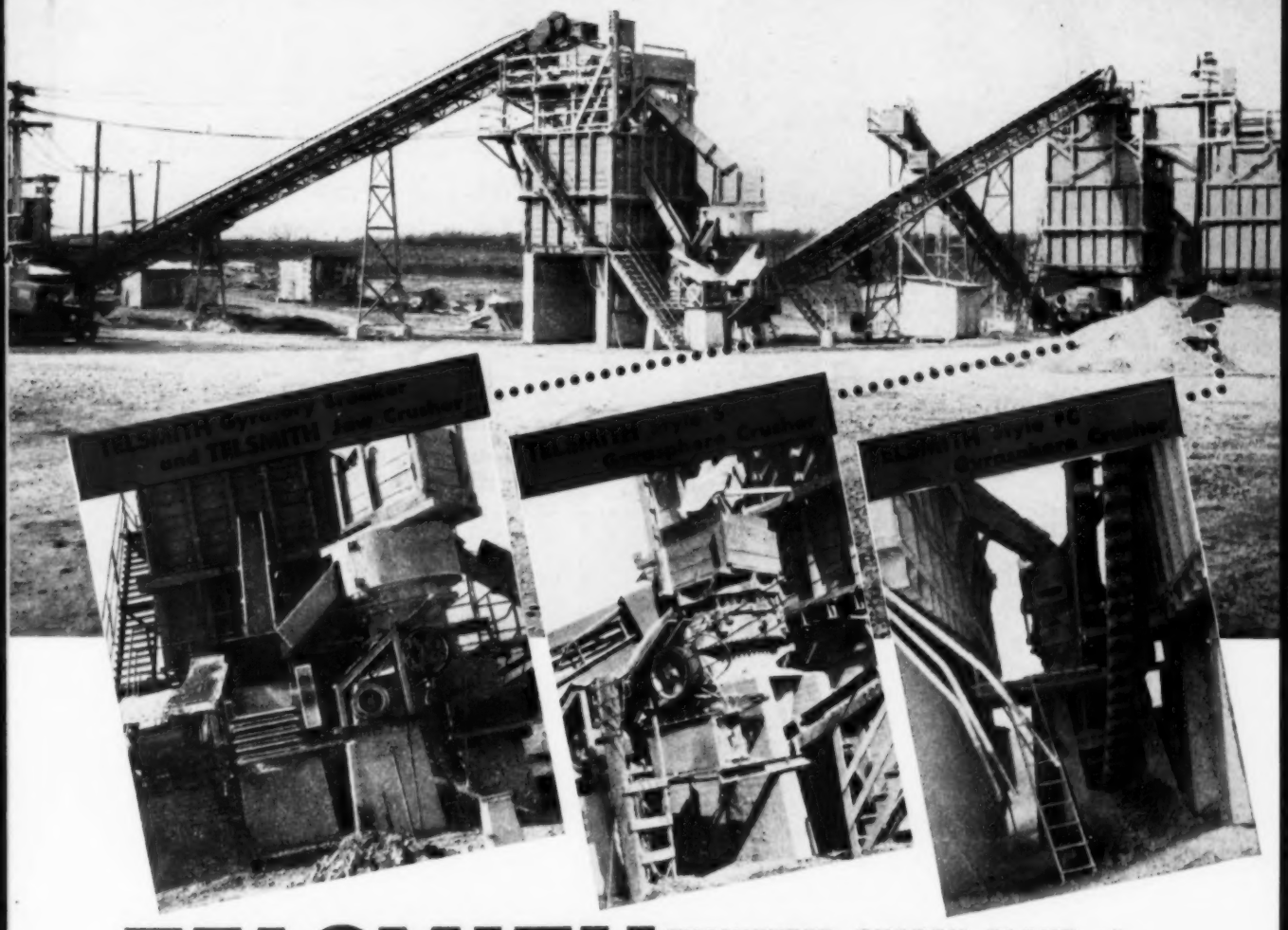
Model 2T-75 two-wheel, rubber-tired tractor with 18 heaped-yard capacity scraper

Model 2T-75 two-wheel, rubber-tired tractor with 20 heaped-yard capacity bottom dump wagon

Model 2T-55 two-wheel, rubber-tired tractor with 13 heaped-yard capacity scraper

7 SIZES...200 Tons Per Hour

for state highway, bituminous, or ready-mix concrete work



TELSMITH ENGINEERED QUARRY PLANT of Valley Quarries, Inc., New Franklin, Pa.

The large demand for crushed aggregate in the lower Cumberland Valley of Pennsylvania is supplied by this Telsmith-engineered quarry plant. The rock is high grade blue limestone. Plant capacity is 200 tons per hour of minus 2½", making all sizes for state highway work, and ready-mix concrete operations, with provisions for producing large tonnages of fine sizes for bituminous work. With their low-cost, efficient operation, Telsmith-engineered plants pay profits. Get Bulletin 266.

Q-26

TELSMITH
Equipment in this Plant

5' x 12' Double-Deck Scalper Screen
13-B Gyratory Breaker
10" x 36" Jaw Crusher
5' x 12' Triple-Deck Pulsator Screen
3' x 10' Double-Deck Pulsator Screen
36 Style S Gyrasphere Crusher
36 Style FC Gyrasphere Crusher
No. 5 Belt Elevator
4' x 10' Triple-Deck Vibro-King Screen

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N. Y. • 211 W. Wacker Drive Chicago 6, Ill. • 713 Commercial Trust Bldg. Philadelphia 2, Pa. • 238 Main Street Cambridge 42, Mass. • Bocbek Eqpt. Co. Milwaukee 3, Wis. • The McLean Co., 3525 Lakeside Ave. Cleveland 14, Ohio

Marens Eqpt. Co., Rochester, Mich. • Rish Eqpt. Co., Cincinnati 14, & Portsmouth, Ohio—Charleston 22, & Clarksburg, W. Va.—Roanoke 7, & Richmond 10, Va.
Robert S. Bailey, 816 W. 5th St., Los Angeles 17, Calif. • Mines Eng. & Eqpt. Co., San Francisco 4, Calif. • Clyde Eqpt. Co., Portland 9, Ore., & Seattle 4, Wash.

It's PENTAERYTHRITETETRANITRATE . . . and it shoots at four miles a second!

"20,350 feet, to be exact. That's *fast* — but not too fast to permit relief of burden. I lay out my shots so that front line holes go a fraction before succeeding lines. I get better fragmentation — easier digging.

"Another thing — I always use the *right* Primacord for the job. Primacord is made in three types:

Plain — for small bore or shallow holes and trunk lines.

Reinforced — for deep holes. It's got a tough cover.

Wire Countered — for very deep, ragged holes, or with heavily reinforced explosives containers.

Plastic Reinforced — in river crossings, deep holes — or when field shots must stand a long time before blasting.

"I get good results every time because I always choose my Primacord as carefully as I use it."

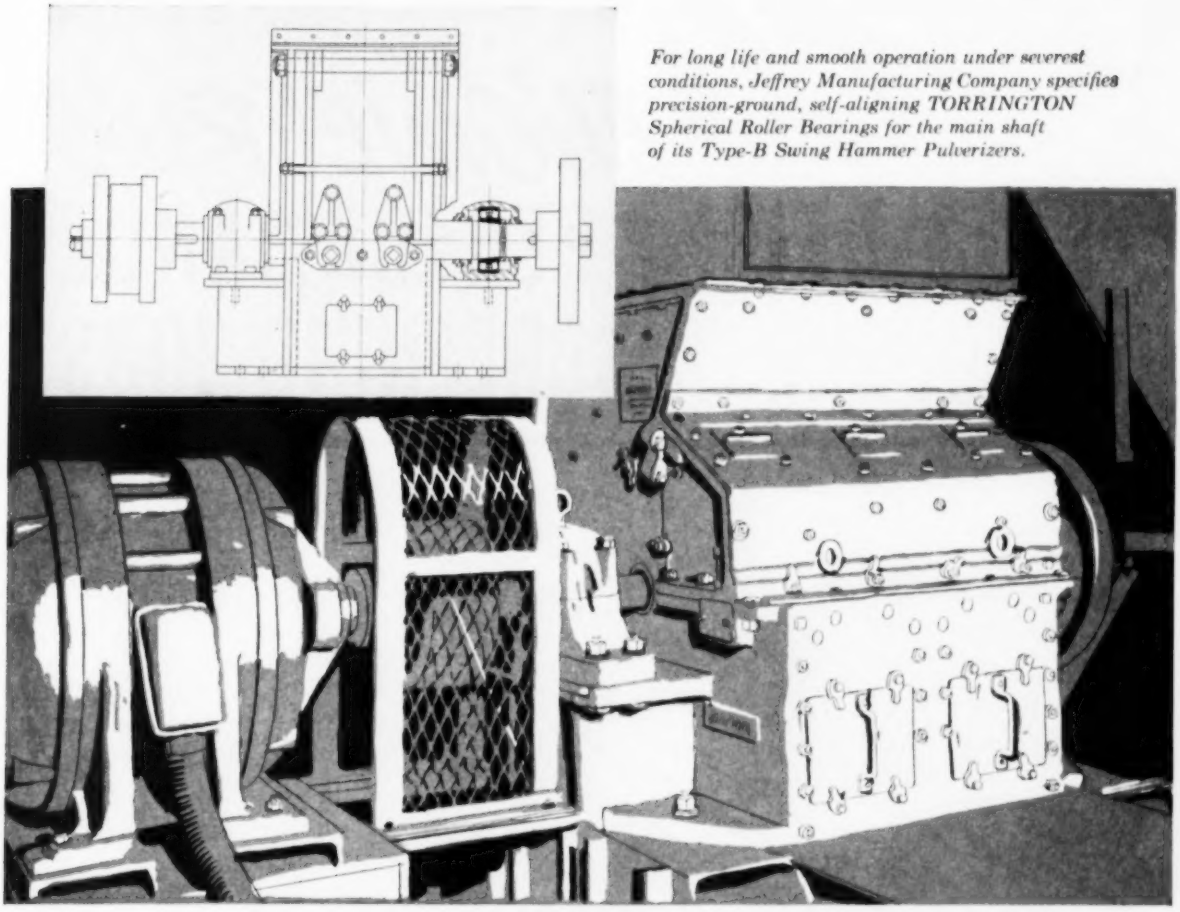
See your explosives supplier or write for information to

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut

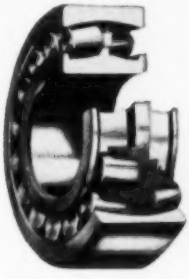
Also Safety Fuse since 1836

PRIMACORD® *detonating fuse*

PROVED and APPROVED



For long life and smooth operation under severest conditions, Jeffrey Manufacturing Company specifies precision-ground, self-aligning TORRINGTON Spherical Roller Bearings for the main shaft of its Type-B Swing Hammer Pulverizers.

With life  to spare

Rock-processing applications are among the world's toughest tests of true bearing quality. TORRINGTON Spherical Roller Bearings pass those tests with life to spare. Here's why:

TORRINGTON Spherical Roller Bearings are built from special electric-furnace alloy steels. They're carefully heat treated by the most advanced methods. They're precision ground to high surface finish and accurate conformity between races and rollers. Each path of rollers has a *one piece* solid bronze cage, assuring freedom of operation.

Integral flange on inner race gives radial stability and positioning for thrust loads—both essential to satisfactory performance.

Put these cost-cutting features into your own rock-processing equipment. Specify TORRINGTON Spherical Roller Bearings—and see for yourself why it pays.

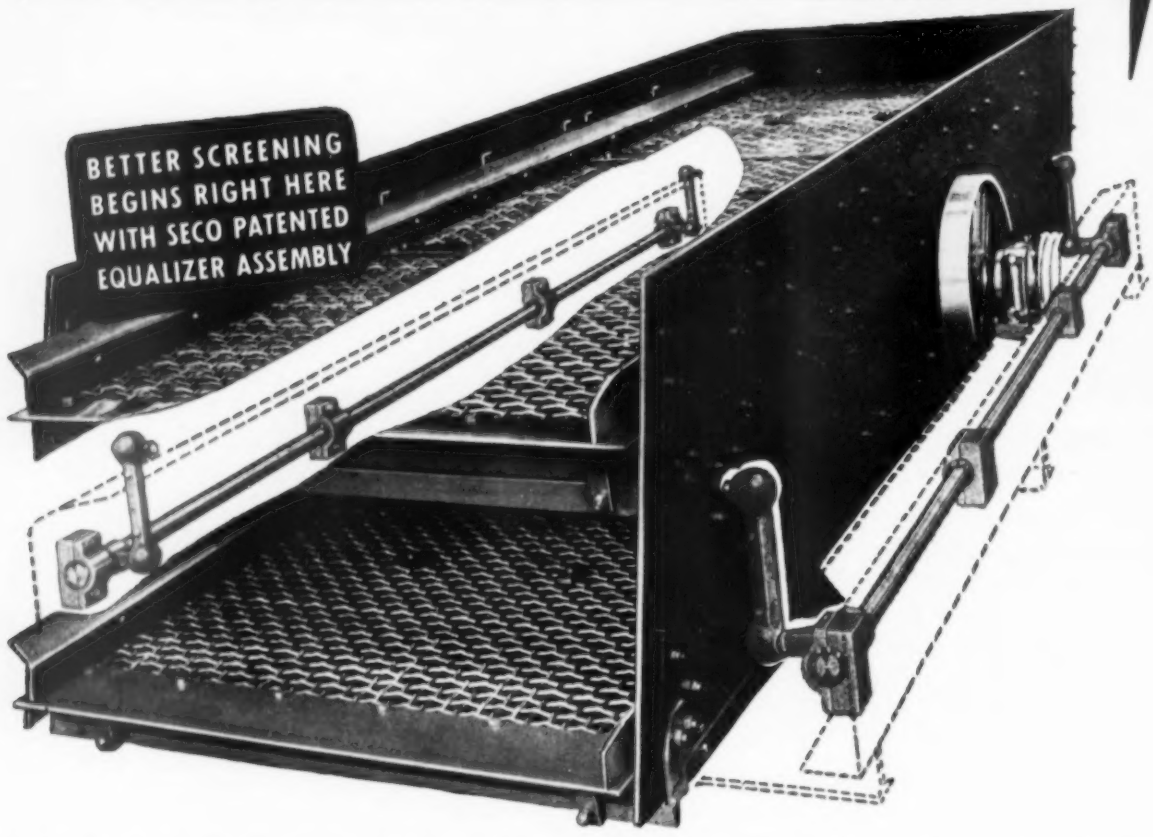
•

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

SECO ENGINEERING PAYS OFF IN PERFORMANCE ON TOUGHEST SCREENING JOBS

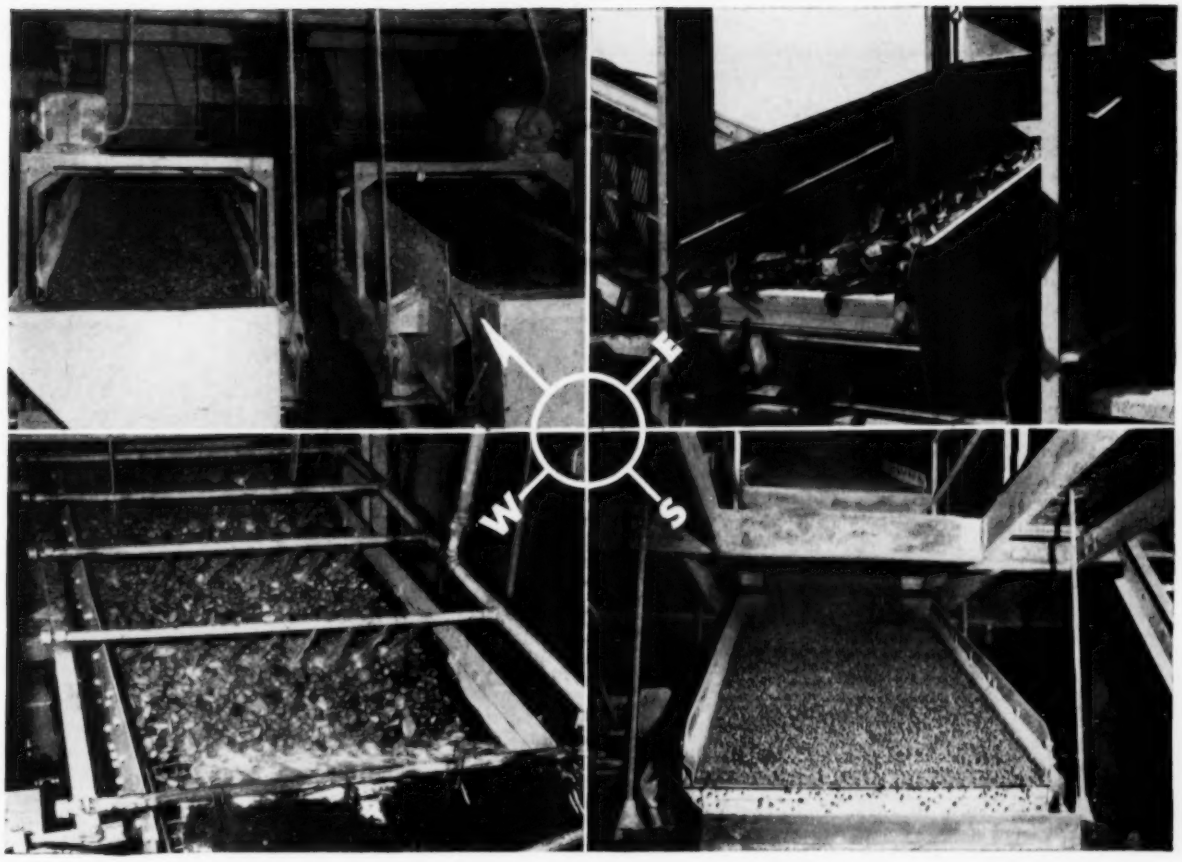


ACCURATELY COMPUTING THE CENTER OF GRAVITY

This is the key to smooth and efficient operation. Every part of the gyrating body is accurately computed as to weight and distance from center.

MACHINING PARTS TO CLOSE TOLERANCES

All machined parts undergo rigid and continuous checks for finish and accurate fit. Skilled machinists use special equipment and precision instruments to insure complete accuracy.



Put SECO Built-in Accuracy and Smoothness on Your Job!

North . . . East . . . South and West you'll find SECO vibrating screens delivering superior performance on all types of screening assignments . . . thanks to SECO engineering advancements.

Why not have the proven advantages of SECO vibrating screens on your job! SECO builds over 300 models in single, double, triple and 3½ decks . . . all featuring built-in smoothness and accuracy to give the best screening results at lowest cost per ton. Send for Catalog #203.

SCREEN EQUIPMENT CO., INC.
BUFFALO 25, N.Y.

SECO
TRUE CIRCULAR ACTION
VIBRATING SCREENS

BALANCE WHEELS COMPLETELY MACHINED FOR ACCURATE COUNTERBALANCE

Balance wheels are a precision-made part. The whole wheel is machined to very close tolerances; then carefully balanced for pull and weight distribution on sensitive ball bearing balancing equipment. This assures even and correct counterbalance at all times.

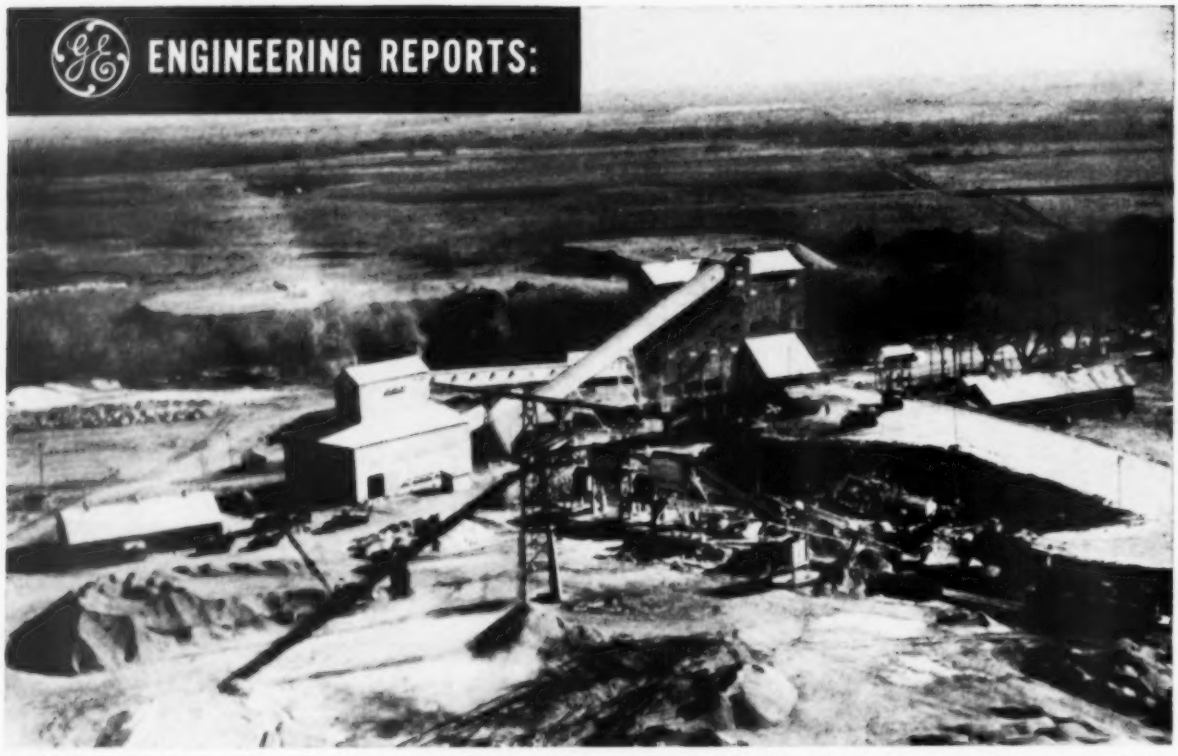
ASSURING ACCURATE FIT OF BEARINGS IN HOUSINGS

Here again SECO's extra care is evident. This equipment presses the bearings into the housings to eliminate the possibility of the outer race turning in the housing. This contributes to smooth performance and long bearing life.

HOW THE DRAW PLATES ARE ACCURATELY FORMED

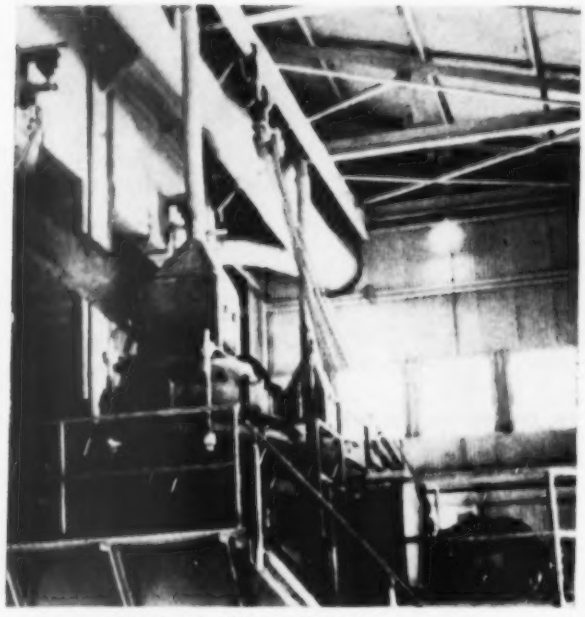
This huge, heavy-duty power brake is used especially for forming the draw plates to pin-point accuracy in dimension. This insures proper fit of screen cloth to eliminate screen cloth breakage.

ENGINEERING REPORTS:

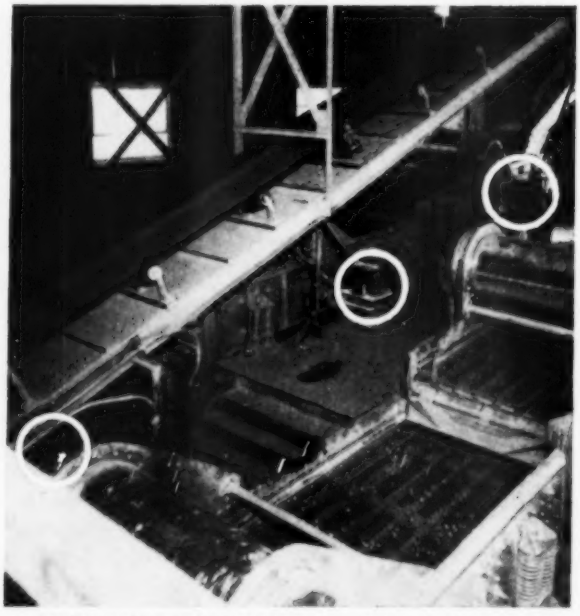


ENTIRE PLANT of Dolese Bros. Co. is operated with General Electric motors and control, co-ordinated to meet diverse, yet exacting specifications. Shown here are earthen ramp and the crushing building (right) and stockpiling facilities (left).

New 750-t.p.h. crushed-stone plant



1 STONE COMES TO THIS CRUSHER on conveyor powered by G-E 100-hp a-c motor (not shown). Solenoid trip (top left) controls feed automatically. Crushed stone is then removed by conveyor driven by G-E motor at lower right.

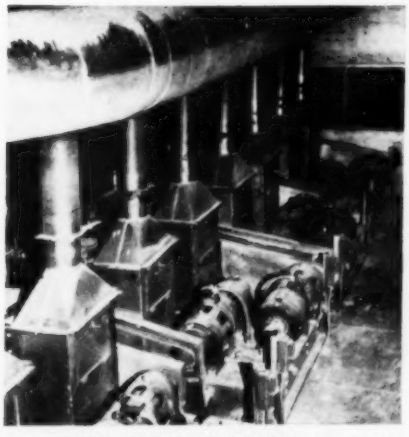


2 SCREENING IS CONTINUOUS to maintain high production rate. All screens are operated by G-E Tri-Clad* totally enclosed motors (circled), which keep production going under all operating conditions.

*Reg. trade-mark of General Electric Company

MASTER CONTROLS for whole operation are easily handled by one man. Desk-type benchboard controls screening process; vertical panel controls all blending and loading. All controls are located in air-conditioned central control room.

accurately controlled by one man



3 FEEDERS SUPPLY BLENDING process by belts driven by this battery of General Electric d-c gear-motors, powered and controlled by G-E speed-variators.

Dolese Bros. Co. plant completely electrified with G-E drives for peak output

One of the most modern crushed-stone plants in the world, Dolese Bros. Co. of Richard Spur, Okla., relies on an electrically co-ordinated plant-flow system for balanced production at top capacity of 750 t.p.h. Nerve center for this fast-moving operation is General Electric centralized control, which accurately integrates all production operations with the Hewitt-Robins materials-handling system.

Each process is pre-set, and controlled with finger-tip sensitivity from the central control room to meet any one of an almost infinite variety of stone-size combinations. Money-saving, production-boosting G-E motors and generated voltage control are used for the entire system. Result is extra flexibility and smooth flow of production through the plant.

FOR HIGHER OUTPUT, MODERNIZE ELECTRICALLY. To eliminate bottlenecks and increase production in *your* plant, G-E application engineers are ready to work with you and your equipment manufacturers. Contact your nearest G-E Apparatus Sales representative today. General Electric Company, Schenectady 5, N. Y. 658-12

Engineered Electrical Systems for the Rock Products Industry

GENERAL ELECTRIC

NEW YEAR
NEW PLANT
NEW LINE

Autocar brings you even more for '54

This shot of the Los Angeles Freeway looks like an engineer's dream-highway for the year 2054. But the road of the future is here now—and on it are three mighty Autocars, tomorrow's tractors for today's hauling.

AUTOCAR looks upon the arrival of each new year as an opportunity to help you improve your operation. For example: In 1954 you will be offered a new series of Autocars, skillfully engineered, in perfect balance, all units complementing one another. And your Autocars will be better than ever in 1954, because we are shortly moving into a new plant which will incorporate every facility for the most efficient production of quality motor trucks.

AUTOCAR TRUCKS

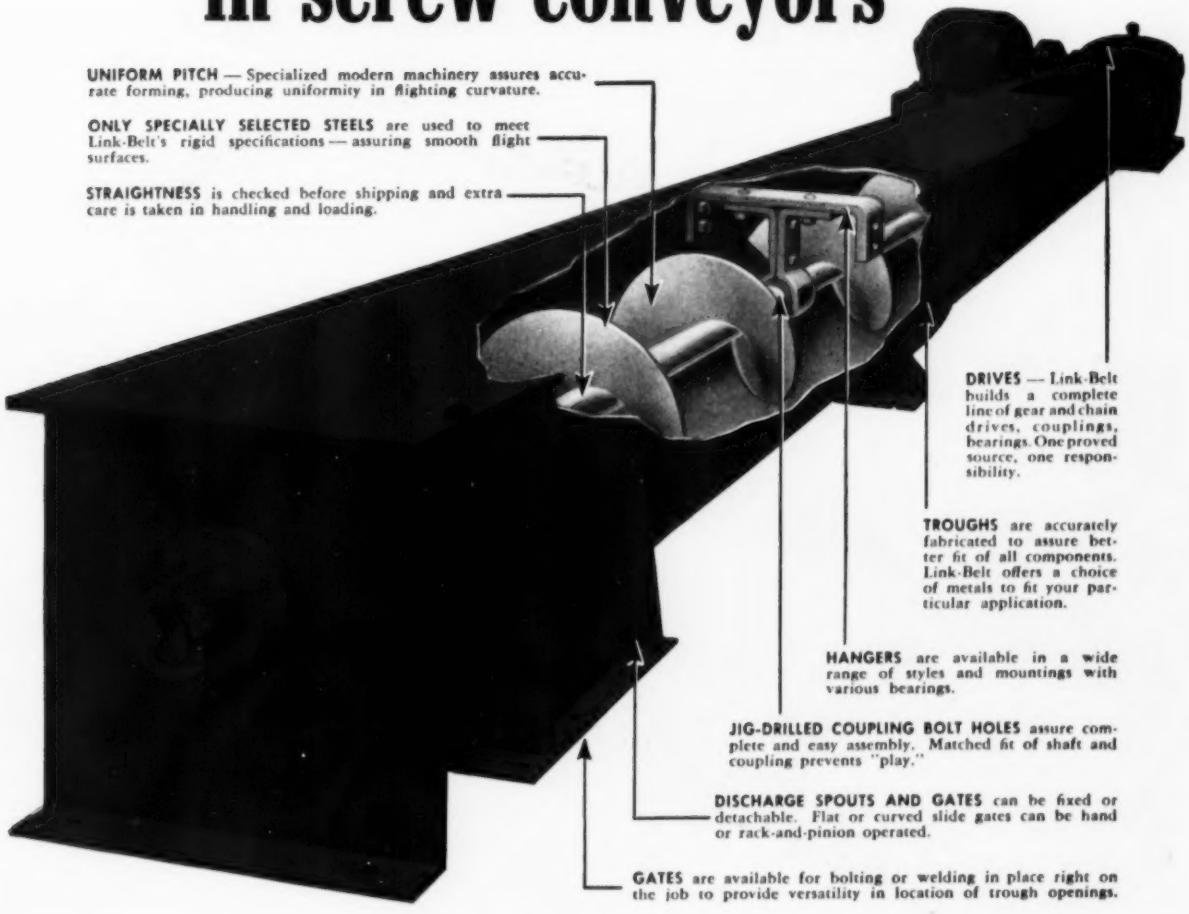
Autocar Division of the White Motor Company
Ardmore, Pa.

•

Factory Branches and Distributors from Coast to Coast in the United States and Canada

Export Dept.: Drexel Bldg., Phila. 6, Pa., U.S.A.

There are important differences in screw conveyors


UNIFORM PITCH — Specialized modern machinery assures accurate forming, producing uniformity in flighting curvature.
ONLY SPECIALLY SELECTED STEELS are used to meet Link-Belt's rigid specifications — assuring smooth flight surfaces.
STRAIGHTNESS is checked before shipping and extra care is taken in handling and loading.
DRIVES — Link-Belt builds a complete line of gear and chain drives, couplings, bearings. One proved source, one responsibility.
TROUGHS are accurately fabricated to assure better fit of all components. Link-Belt offers a choice of metals to fit your particular application.
HANGERS are available in a wide range of styles and mountings with various bearings.
JIG-DRILLED COUPLING BOLT HOLES assure complete and easy assembly. Matched fit of shaft and coupling prevents "play."
DISCHARGE SPOUTS AND GATES can be fixed or detachable. Flat or curved slide gates can be hand or rack-and-pinion operated.
GATES are available for bolting or welding in place right on the job to provide versatility in location of trough openings.

LINK-BELT gives you sound engineering plus accuracy of manufacture for top performance

WHEN you buy a Link-Belt Screw Conveyor, you can be sure of efficient operation plus long-life, low-maintenance service. Link-Belt builds all types and sizes of components—you get the screw conveyor that's *right* for your job . . . with all components *completely integrated*. What's more, long-lasting efficiency is assured, thanks to Link-Belt's unequalled accuracy of manufacture. Let your nearby Link-Belt sales representative or distributor point out the many important differences in screw conveyors. And be sure he gives you a copy of new Book 2289.

13.277

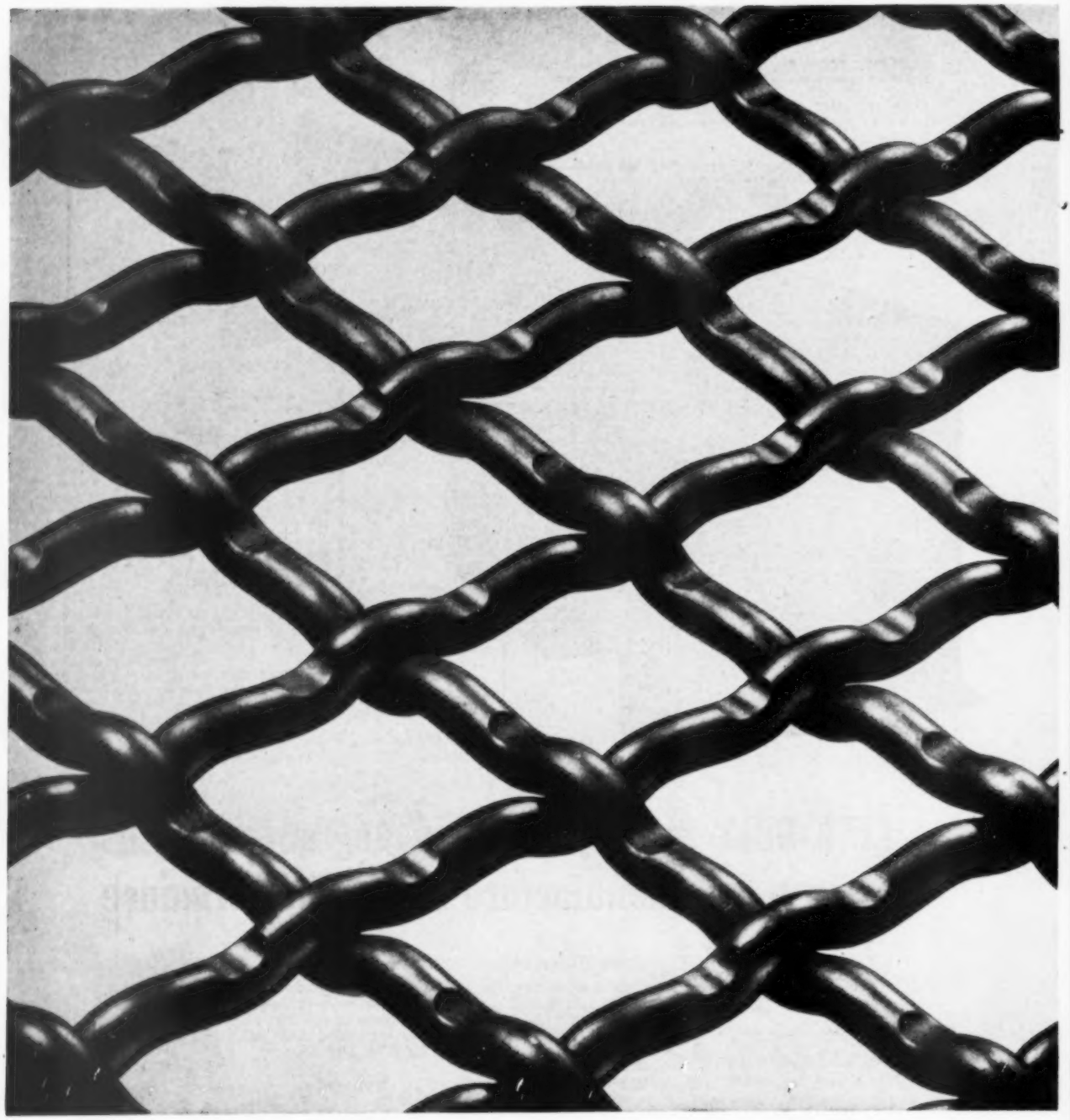
Get this complete screw conveyor book—92 pages of pre-engineered selection and application data. Ask for Book 2289.

LINK-BELT

SCREW CONVEYORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarboro, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

How Are You Fixed for



HEWITT-ROBINS

EXECUTIVE OFFICES, STAMFORD, CONNECTICUT

Screen Cloth this Year?

Keep your aggregate production at its peak. Order your screen cloth needs from Hewitt-Robins now while production schedules are not crowded. You will save on costly down time and replacement delays in the months ahead.

Regardless of make or type of vibrating screen, Hewitt-Robins Screen Cloth will give you longer life and greater satisfaction . . . provide you with higher operating efficiency, lowest cost per ton.

ENGINEERING DATA

SIZE OPENINGS: ⅛" or coarser.

TYPES OF WEAVE: Square Opening available in Double Crimp, Lock Crimp, Flat Top . . . Rectangular Opening available in Double Crimp, Lock Crimp, Flat Top . . . Non-Spreader and Non-Blind.

TYPES OF WIRE: Super-Gyraloy® Oil Tempered—recommended for extremely abrasive materials. Gyraloy Spring Steel recommended for use in sizing and processing materials where abrasiveness is not a prime factor. Special Metals—stainless, plain or galvanized steel; brass; phosphor bronze; Monel and other ductile metals.

WRITE FOR SCREEN CLOTH BULLETIN No. 113-A1

Here is a partial list of

HEWITT-ROBINS PRODUCTS

that will help you cut handling costs and increase operating efficiency.

MACHINERY

- Belt Conveyors
- Belt & Bucket Elevators
- Car Shakeouts
- Conveyor Idlers
- Dewaterizers
- Mechanical Feeders
- Foundry Shakeouts
- Mine Conveyors
- Reclaiming Systems
- Screen Cloth
- Stackers & Trippers
- Vibrating Conveyors & Screens

INDUSTRIAL RUBBER PRODUCTS

BELTING:

- Conveyor
- Elevator
- Transmission

HOSE:

- Acid
- Air & Air Drill
- Barge Loading
- Dust Suction
- Fire
- Fuel Oil & Gasoline
- Gasoline Pump
- Mud Pump Suction
- Oil Suction & Discharge
- Propane-Butane
- Road Builders'
- Rotary Drilling
- Sand Blast
- Sand Suction
- Sea Loading
- Servall®, All-Service
- Steam
- Tank Car & Tank Truck
- Vacuum & Air Brake
- Water & Water Suction
- Welding, Twin-Weld®

•

For information and service on industrial rubber products, contact your Hewitt-Robins Industrial Supply Distributor. Through his complete stock of Hewitt-Robins Rubber products, and his familiarity with local field conditions, he can fill your supply needs promptly and correctly. See Classified Phone Book for the Hewitt-Robins Industrial Supply Distributor serving your area.

2535

INCORPORATED

DOMESTIC DIVISIONS: Hewitt Rubber • Robins Conveyors • Robins Engineers • Restfoam
FOREIGN SUBSIDIARIES: Hewitt-Robins (Canada) Ltd., Montreal • Hewitt-Robins Internationale, Paris, France • Robins Conveyors (S. A.) Ltd., Johannesburg • **EXPORT DEPARTMENT:** New York City.

GM DIESEL
CASE HISTORY No. 639-51

USER: Geo. M. Brewster & Son, Inc., Bogota, N. J.

INSTALLATION: Four GM Diesel-powered Ingersoll-Rand Gyro-Flo 600 compressors supplying air for 9 I-R 71 wagon drills.

PERFORMANCE: "Completely satisfactory," says operator Tom Malone. Units shown were delivering air to the tools through 1200 to 1600 feet of line--maintaining steady pressure of 100 to 110 psi.

It pays to STANDARDIZE on

GM
GENERAL MOTORS
DIESEL
POWER

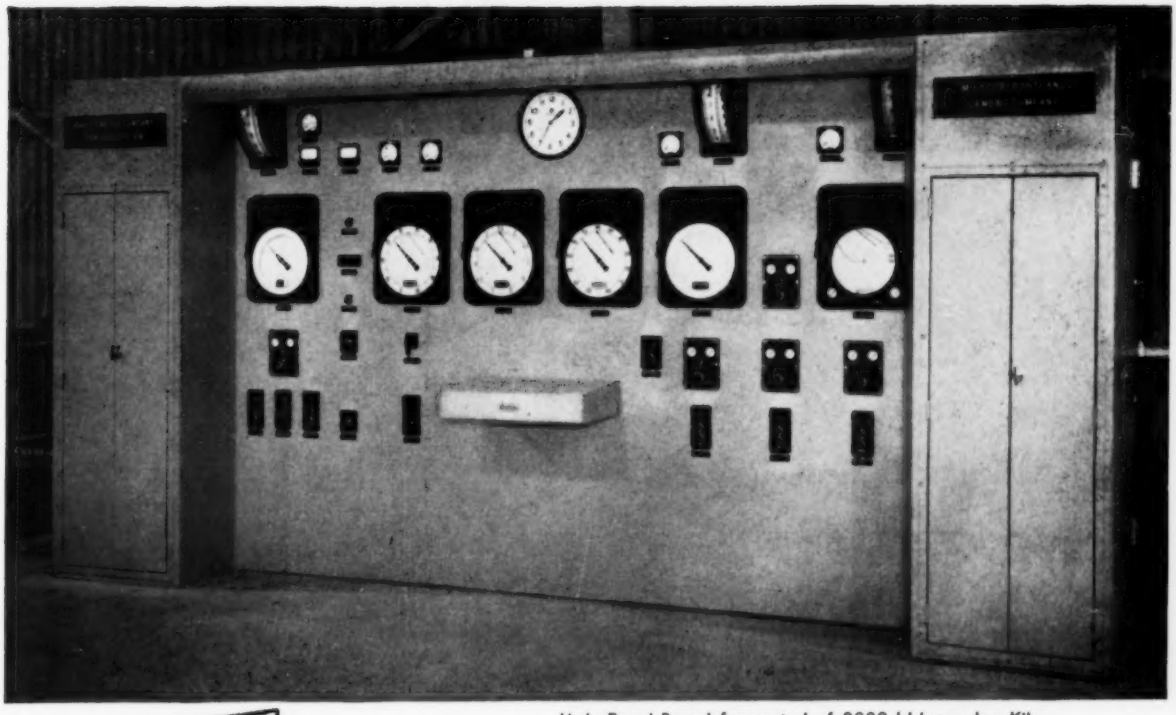
2400 CUBIC FEET OF AIR PER MINUTE ON NEW YORK THRUWAY ROCK CUT

Geo. M. Brewster & Son now operate a total of 18 General Motors Diesel-powered Gyro-Flo compressors, including this battery of four capable of supplying 2400 cubic feet of air per minute for rock drills on a section of the New York Thruway, near Kingston.

These modern rotary compressors take full advantage of GM Diesel's smoother-running 2-cycle operation to maintain a steady flow of nonpulsating air at 100 psi or better. And compactness of the GM 2-cycle design makes these units smaller and lighter for quick, easy movement from job to job.

This inherent engine design superiority—plus interchangeability of lower-cost parts, readily available through a world-wide GM Diesel service organization—explains why GM Diesel power is a favorite of contractors on so many jobs. Next time you order equipment, it will pay you to specify GM Diesel. Available as original or replacement power in more than 750 different models of equipment. Write us for complete list.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.



Main Panel Board for control of 3000 bbl per day Kiln at Missouri Portland Cement Company, St. Louis, Missouri.

3 Ways Better

...Bailey Control for Rotary Kilns

Bailey Control for Rotary Kilns gives you better performance three ways:

1. Economical Operation
2. Uniform Quality of Product
3. Reduced Maintenance

These are advantages which can be achieved when all phases of kiln operation are coordinated to work together as a team. Here's how Bailey Kiln Control can help you get all three.

ECONOMICAL OPERATION

With Bailey Combustion Control you can be certain that you are getting maximum product for every unit of fuel you burn. Bailey Control closely guards the Fuel-Air Ratio, Hood Draft, Fuel Feed, Clinker Cooling and the Temperature of Air for Combustion.

UNIFORM QUALITY OF PRODUCT

Bailey Instruments and Controls can help you achieve a uniform high grade product. Measurements of temperatures, kiln speed, combustibles content, and oxygen content can be transmitted to recorders on centrally located control boards like the one shown. There is no sacrifice of accuracy or speed of response. High temperature alarm contacts may also be provided with Bailey Pyrometers as a further aid in achieving optimum uniformity of product.

REDUCED MAINTENANCE

By maintaining uniform temperatures and excess air conditions in the kiln, Bailey Controls help to reduce to a minimum costly refractory repairs and wear and tear on auxiliary equipment.

Bailey Meter Company has a staff of engineers who are experts in the control of rotary kilns. Assure yourself of optimum kiln performance. Let one of these men help plan your Kiln Control System. P-22

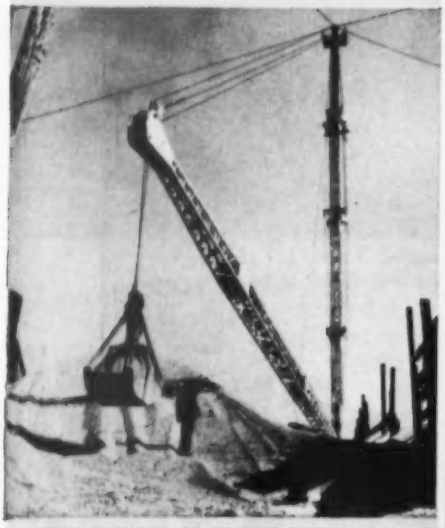
BAILEY METER COMPANY

1051 IVANHOE ROAD • • • CLEVELAND 10, OHIO

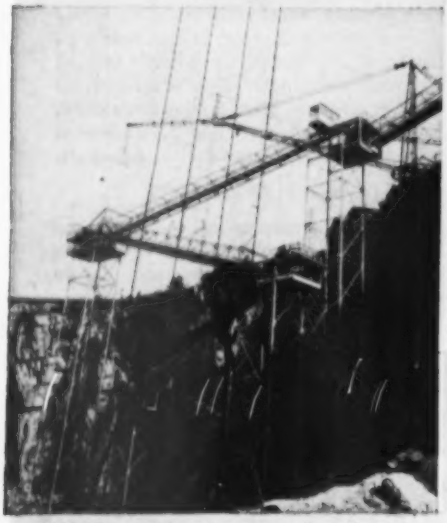
Controls for Processing

TEMPERATURE
PRESSURE
% OXYGEN
% COMBUSTION
FLOW
LEVEL
DENSITY
RATIO

At this granite quarry..

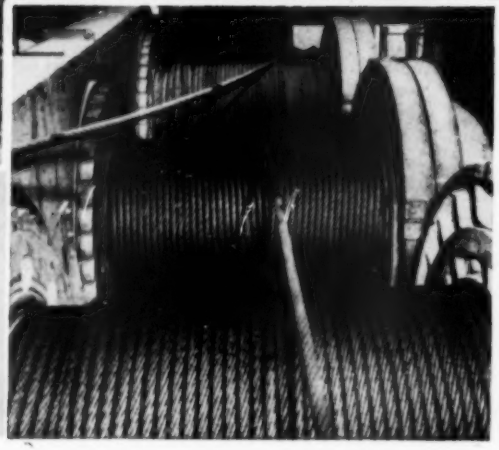


TINY PARTICLES OF GRANITE DUST are constantly grinding away the wire ropes on this Storage Derrick. But ⅝" Tiger Brand Ropes have averaged many years of good service in spite of this severe abrasive action.

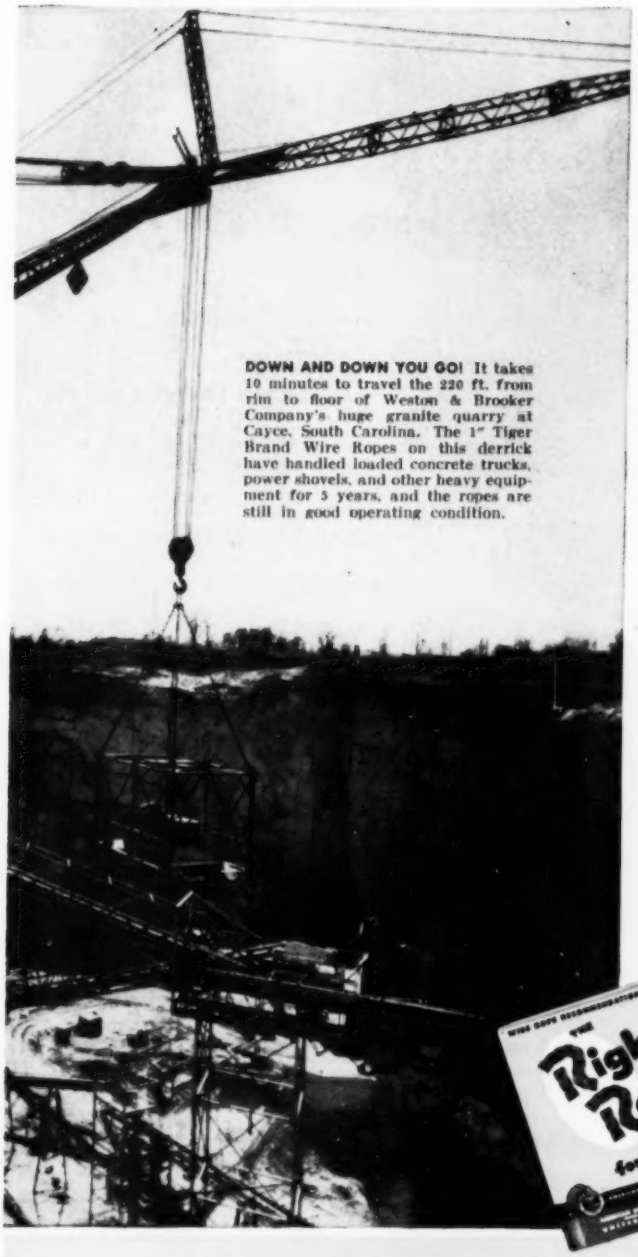


SAFE AND SOUND after years of continuous service. That is the amazing record of the ¾" Tiger Brand Ropes on this cableway, which is used to move workers in and out of the quarry.

THE WESTON & BROOKER COMPANY likes Tiger Brand Wire Ropes because they meet the stiff operating requirements and do every job economically.



Tiger Brand Wire Ropes have been used 29 years!



DOWN AND DOWN YOU GO! It takes 10 minutes to travel the 220 ft. from rim to floor of Weston & Brooker Company's huge granite quarry at Cayce, South Carolina. The 1" Tiger Brand Wire Ropes on this derrick have handled loaded concrete trucks, power shovels, and other heavy equipment for 5 years, and the ropes are still in good operating condition.

PLUNGING 220 ft. down through solid granite, this big open quarry is one of the deepest in the country. But no roads wind down to the floor, so The Weston & Brooker Company must transport all men and equipment with cableways and derricks.

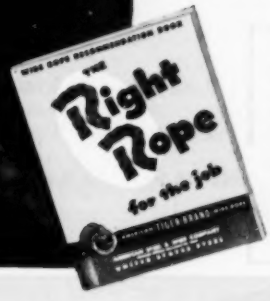
This old, experienced company prefers American Tiger Brand Wire Ropes for this equipment over any other brand. Tiger Brand Ropes meet the tough operating requirements and give remarkable service.

On a cableway, which was installed in 1924, Tiger Brand Ropes have given long and phenomenal service.

On a big 70-ton stiff-leg derrick, which lifts shovels, trucks and other equipment weighing up to 80 tons, Tiger Brand Ropes are still in use after five years of hard service.

On a revolving storage crane, which operates right in the thick of hard, abrasive granite dust, Tiger Brand Wire Ropes again have given exceptional service.

Tiger Brand Wire Ropes will give *you* exceptionally long, low-cost service too. Send the coupon for a run-down on the hundreds of sizes and types available and typical jobs that each rope can do.



HELPFUL GUIDE BOOK

American Steel & Wire
842 Rockefeller Building
Cleveland 13, Ohio

Please send me, without obligation, a copy of your booklet, "The Right Rope for the Job," which lists the correct Tiger Brand Rope to use for hundreds of typical applications.

Name_____

Company_____

Address_____

City & State_____

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS

UNITED STATES STEEL

You can't compete if your equipment is obsolete!

With construction activity becoming more competitive, even in the face of high labor costs, it is more important than ever before to take a closer look at your operating costs . . . your dirt moving methods . . . your tools and equipment.

Obsolete methods and equipment take a heavy toll by slowing down output, increasing manhours and increasing repairs and maintenance. Efficient material handling equipment can make the difference between profit and loss on most any job . . . help insure that time and production schedules are met without resorting to expensive overtime and wasteful emergency practices.

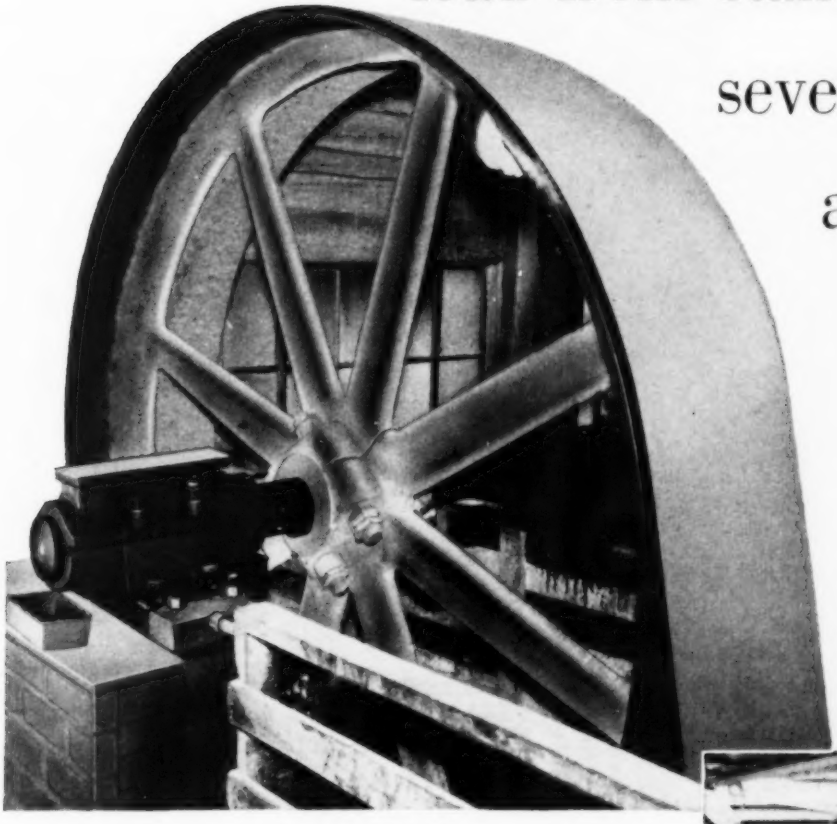
If you are not using "PAYLOADER" Tractor-Shovels at present, it will pay you to investigate these fast, flexible, rubber-tired loaders that have proven so profitable for so many material producers and contractors, both large and small.

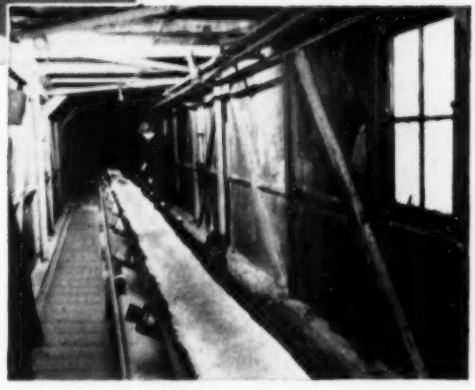
If you are already "PAYLOADER"-equipped, you'll be pleasantly surprised at the superior performance of the late model "PAYLOADERS". Although "PAYLOADERS" are built to give thousands of hours of dependable service, constant research and engineering improvements keep them out in front in design, construction and performance.

Now is the time to trade in obsolete equipment — to modernize your methods to meet present day conditions — to assure profitable operation in spite of closer competition. Your nearby "PAYLOADER" Distributor will gladly demonstrate any of the new models. The Frank G. Hough Co., 750 Sunnyside Ave., Libertyville, Ill.

PAYLOADER®
THE FRANK G. HOUGH CO. • Since 1920

This "U. S." Belt starts a 30-ton load from standstill... several times a day!





That's a terrific load in anyone's book, but this U. S. Royal transmission belt has been transmitting power six days a week, 24 hours a day in a Midwest silica plant. How long can this go on? Well, the previous "U. S." belt on this job lasted more than seven years.

Plant officials say this belt starts instantly at peak efficiency even in winter time, when the plant temperature is below freezing.

The photo at right shows a U. S. Giant® Conveyor Belt also used in the silica plant. The belt has been carrying wet sand for more than four years and is still going strong, with many more years of service life ahead.

These two belts, transmission and conveyor, demonstrate the *quality* which United States Rubber Company builds into its products – and the long, dependable service industry obtains from them. Call any of our 25 District Sales Offices, each staffed with sales engineers, or write to address below.

U.S. RUBBER
SERVING THROUGH SCIENCE

"U. S." Research perfects it
"U. S." Production builds it
U. S. Industry depends on it

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes
Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

Cedarapids Built by IOWA

UNITIZED PLANT

HERE'S the way to outproduce your competition, handle *any* aggregate producing job that comes along . . . and do it at the low production costs that mean a tidy profit on every job.

The Cedarapids Unitized Plant shown above produced four products at a time . . . lime dust from 1/8" down, 3/4" Class A road rock, 3/8" minus material and 3/8" to 3/4" aggregate . . . at a rate of 210 tons per hour!

To meet specifications for other jobs, the basic primary crushing, scalping, secondary crushing and bin units can be combined in dozens of different ways to produce any size products in volumes up to 250 tons per hour or more in quarry operations. And you get real economy in operating and maintenance costs.

Your Cedarapids distributor can give you *all* the reasons why Unitized Plants are your best bet for beating competition. *Call on him today.*

USE THESE 4 BASIC UNITS IN ANY COMBINATION

PORTABLE PRIMARY CRUSHER reduces raw material to a size readily handled by the scalping unit or secondary crushing unit. Single and Twin Jaw Crusher or Double Impeller Impact Breaker units available in a wide range of sizes.

SCALPING UNITS, consisting of a single or twin jaw crusher and horizontal scalping screen, remove excess fines and dirt, and perform a crushing operation to reduce the circulating load for the secondary crushing unit. Choice of sizes.

SECONDARY CRUSHING UNITS are complete crushing and screening plants designed for high volume production of fine crushed products. Three types of crushers are available . . . roll, twin jaw or hammermill . . . to suit your job requirements.

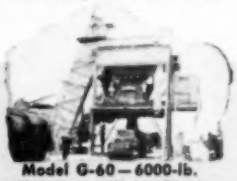
BIN UNITS may be portable storage and loading bins, as shown above, or wet or dry screening, storage and loading units.

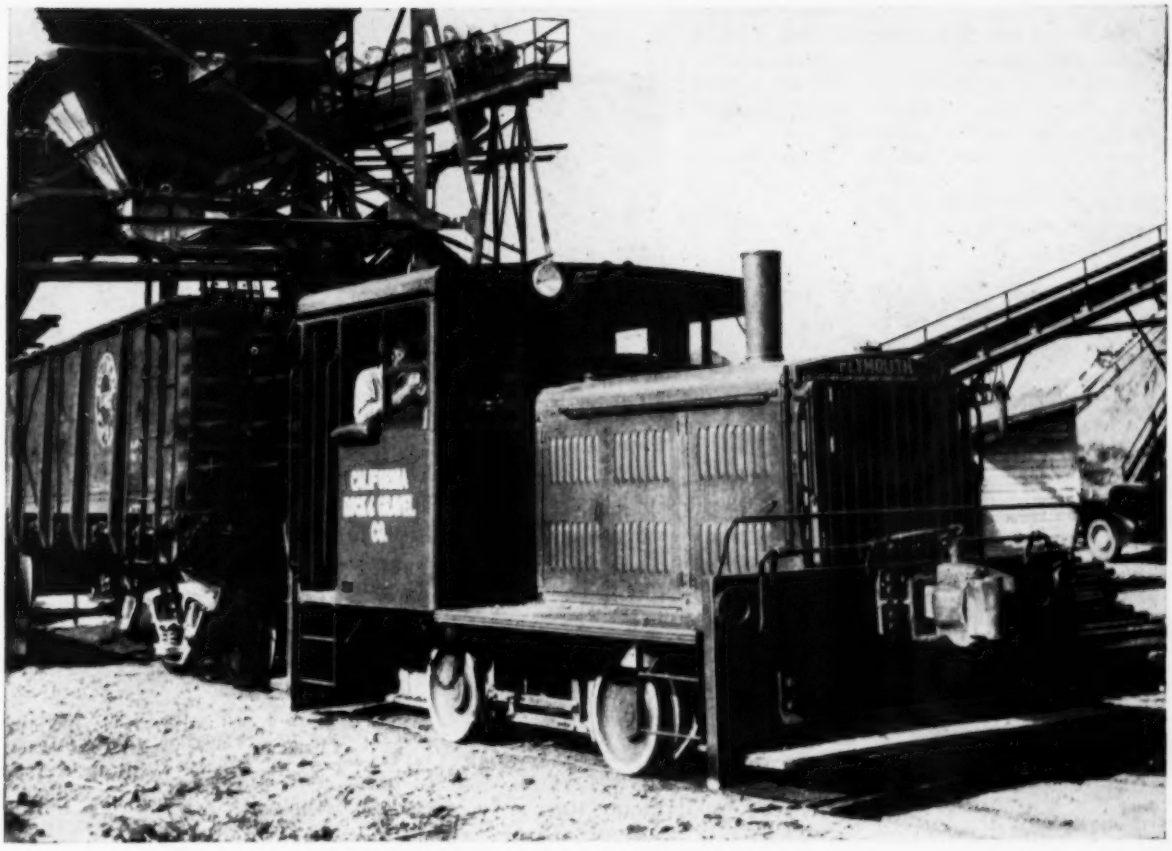
IOWA MANUFACTURING COMPANY Cedar Rapids, Iowa, U. S. A.

Master Bituminous Mixing Plant

Vibratory Soil Compactor

Motorized Head Pulley


Model G-60—6000-lb. Bituminous Mixing Plant



MAINTENANCE REDUCED!

—when we changed to Plymouth

"Our Diesel-powered Plymouth Locomotive is a very efficient piece of equipment. We especially like the smoothness of its Torqomotive Drive* and the fact that it costs us less maintenance than our former locomotive of another make."

That's the way an 18-ton Plymouth impresses the President of the California Rock and Gravel Company of San Francisco. Many more Plymouth owners in a wide variety of industries across the nation are equally sincere in their praise of Plymouth.

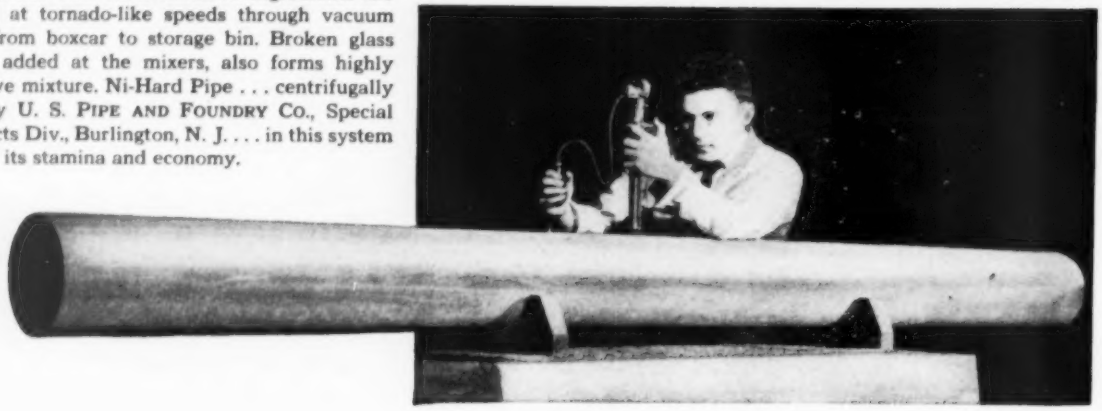
It costs you nothing to let our experts recommend the Plymouth most suited to your needs. Models range from 3 to 70 tons and have gasoline and Diesel-mechanical, gasoline and Diesel-Torqomotive or Diesel-electric drive. For full information write: PLYMOUTH LOCOMOTIVE WORKS, Dept. A-15, Plymouth, Ohio.

*Torqomotive Drive: Plymouth transmission with hydraulic torque-converter.

PLYMOUTH
TORQOMOTIVE
LOCOMOTIVES

ALSO MANUFACTURERS OF F-R-H CERAMIC MACHINERY

In the raw material handling system of THE THATCHER GLASS MANUFACTURING CO., INC., MCKEE DIVISION, Jeanette, Pa., tons of silica, sand, borax and other abrasive ingredients are hurled at tornado-like speeds through vacuum lines from boxcar to storage bin. Broken glass scrap, added at the mixers, also forms highly abrasive mixture. Ni-Hard Pipe . . . centrifugally cast by U. S. PIPE AND FOUNDRY CO., Special Products Div., Burlington, N. J. . . . in this system proves its stamina and economy.



NI-HARD PIPE in abrasive service

outlasts predecessors 38 to 1

Yes, 38 to 1—Here is additional evidence that Ni-Hard* provides abrasion resistance at lowest ultimate cost...

NI-HARD performance under severe abrasive action in a pneumatic conveyor system handling glass-furnace charges is shown below. Compare its record with that of rubber-lined steel pipe which replaced the short-lived original standard steel piping. And, incidentally, contamination...a cause of serious discoloration in glass...was reduced 80% by using Ni-Hard.

38 times the tonnage and still going strong

Material	Production Before Failure (tons)
¼" rubber lining in 6" carbon steel pipe	1,100
¼" rubber lining in 6" carbon steel pipe	1,376
¼" rubber lining in 6" carbon steel pipe	1,800
NI-HARD PIPE (5" I.D. x ½" wall)	70,000*

Field Report on Ni-Hard
BY THE
MCKEE DIVISION
*still in service

If abrasion is your problem, investigate Ni-Hard. Use our wide and valuable practical experience gained over the past 20 years in the Ni-Hard field. Take the first step *now*...send us details of your problem for our suggestions as to whether this abrasion-resistant material is the best answer to your particular need.

INCO

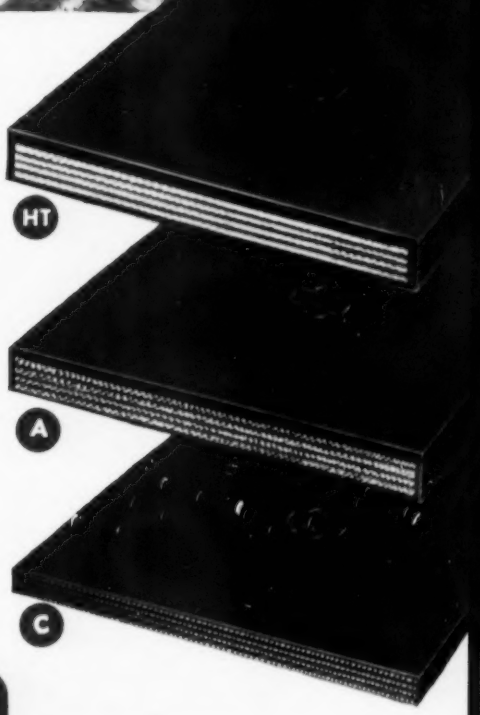
THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N.Y.

Thermoid Conveyor Belting cuts handling costs in quarries

Thermoid
Industrial Rubber Products
Quality Service

There's a Thermoid Conveyor Belt designed to lower your handling costs on every quarry job. Here are three examples: **HT** For extremely abrasive materials such as granite, trap rock, flint rock, quartz ore; **A** For slag, lime rock, crushed stone and other highly abrasive materials; **C** For moderate abrasives such as sand, loam, soda, gravel.

Thermoid's exclusive impregnation process welds carcass and cover into an exceptionally strong, durable belt. Finest quality reinforcement and specially compounded rubber stocks assure long life . . . lower your handling costs per ton. Call your Thermoid Distributor, or write direct for Catalog #3687.



Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah

When too much oversize became a problem...

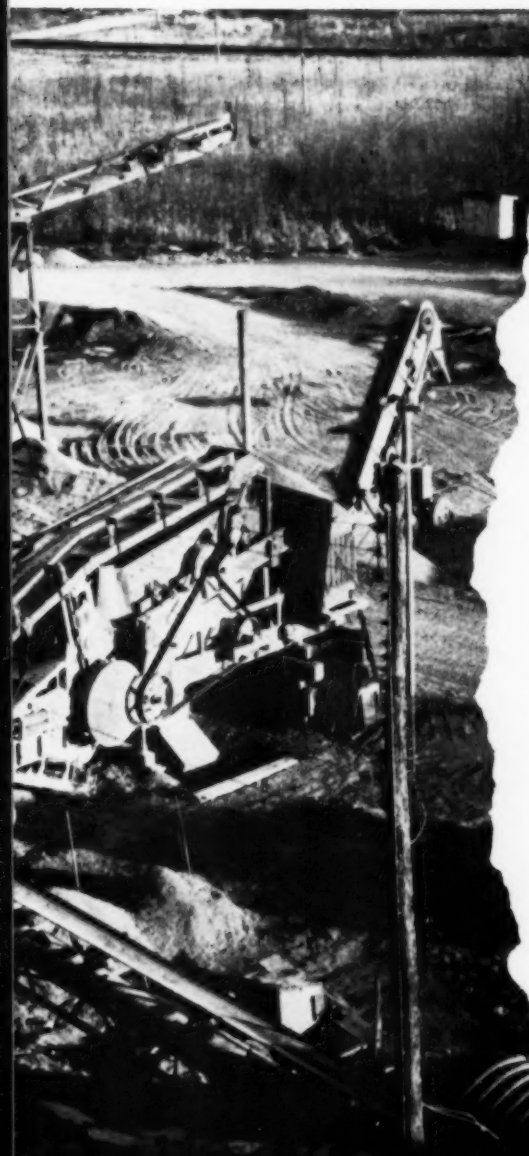
that Pioneer Edge

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

turned it into profit



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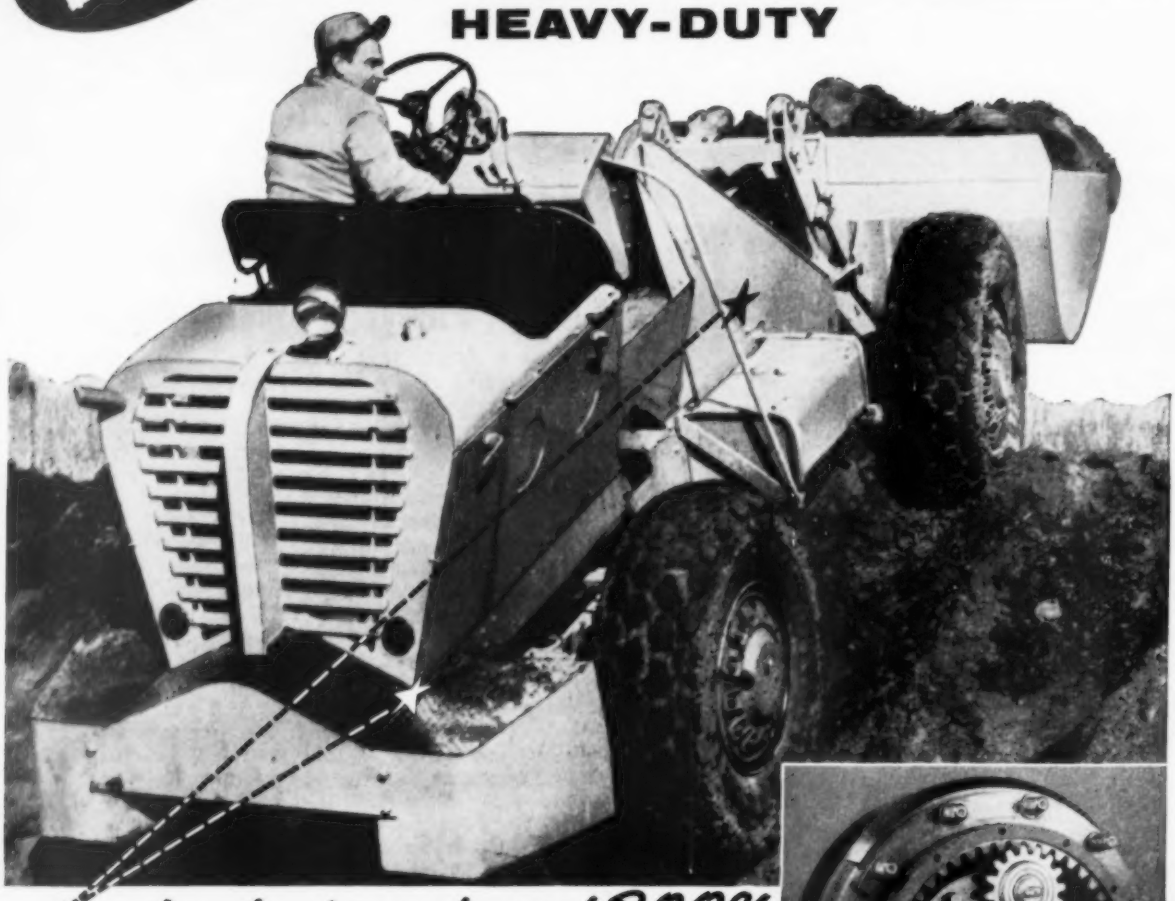

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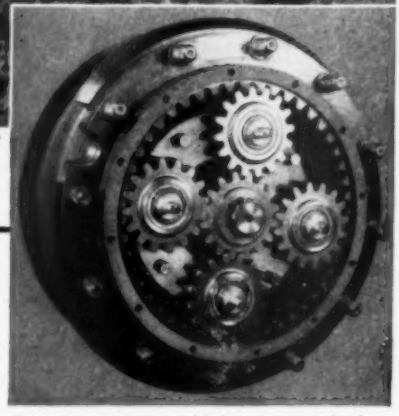

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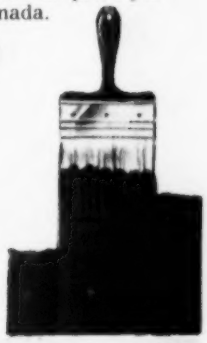

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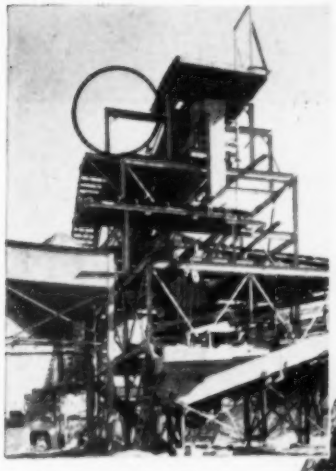

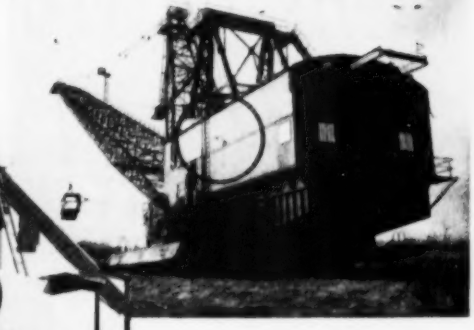

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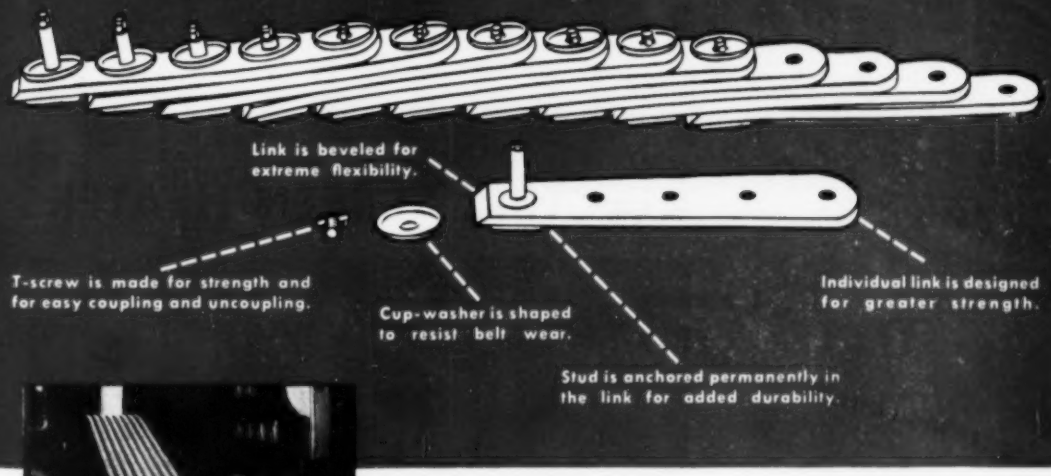
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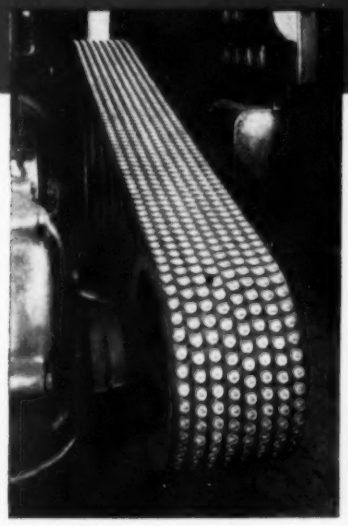

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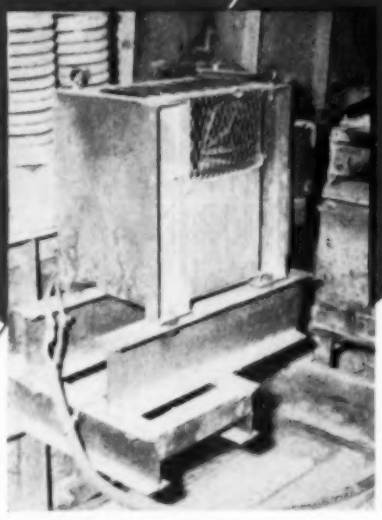

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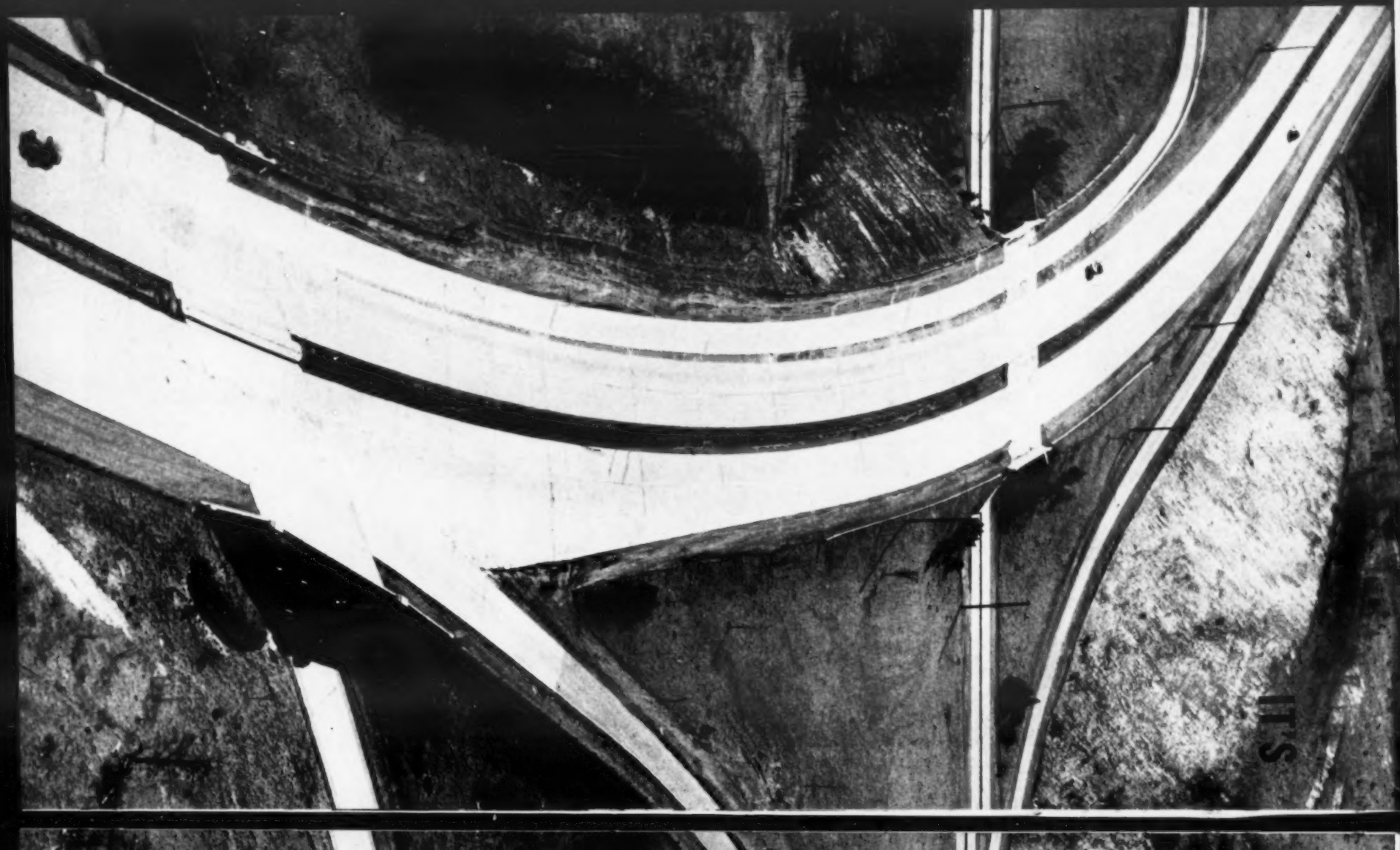

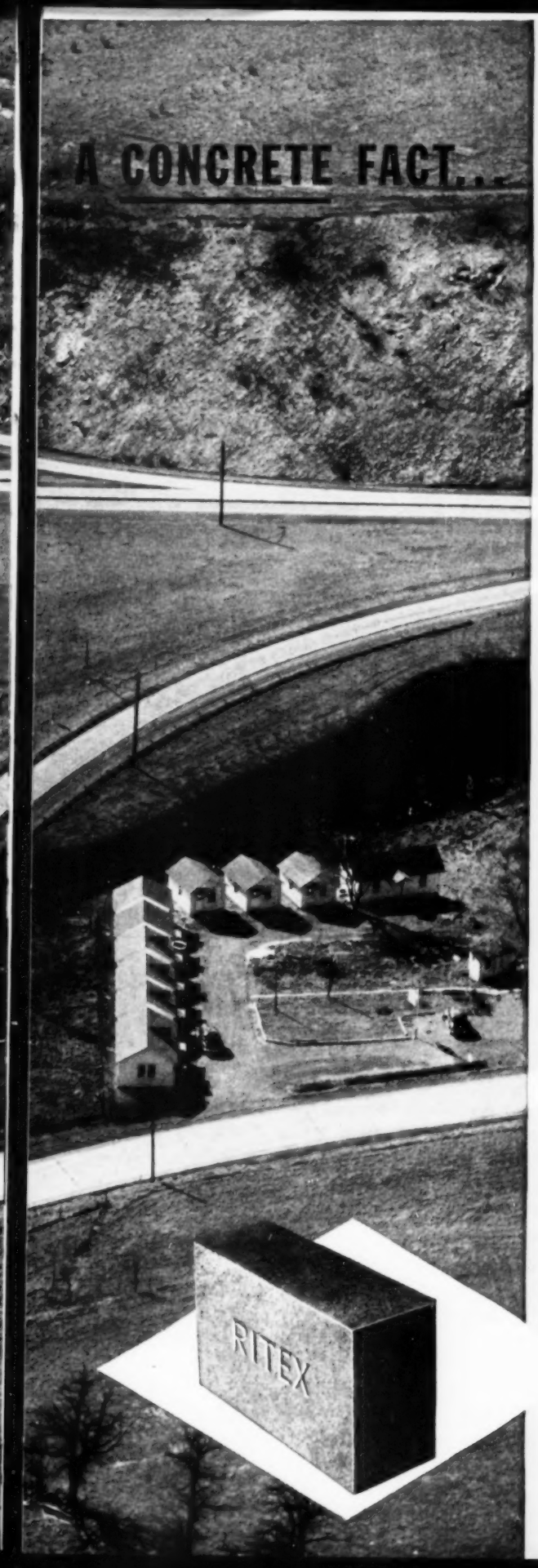

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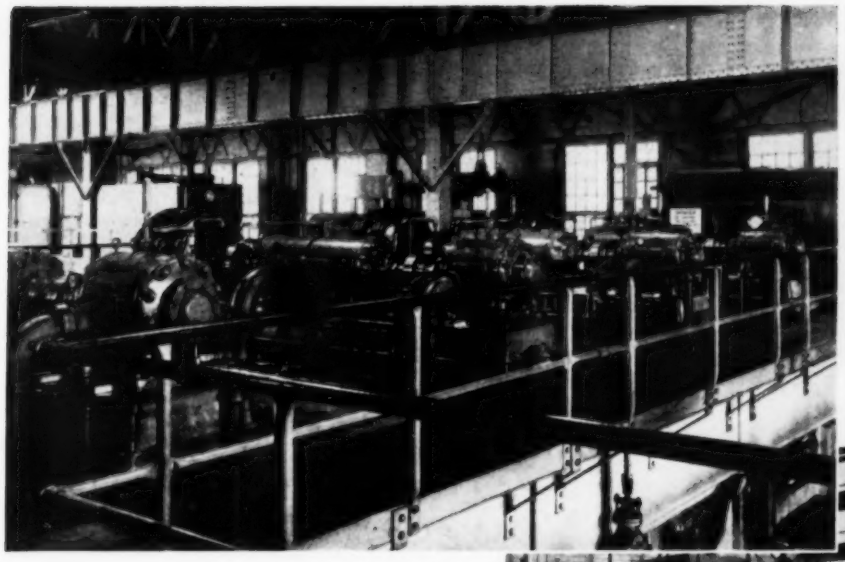

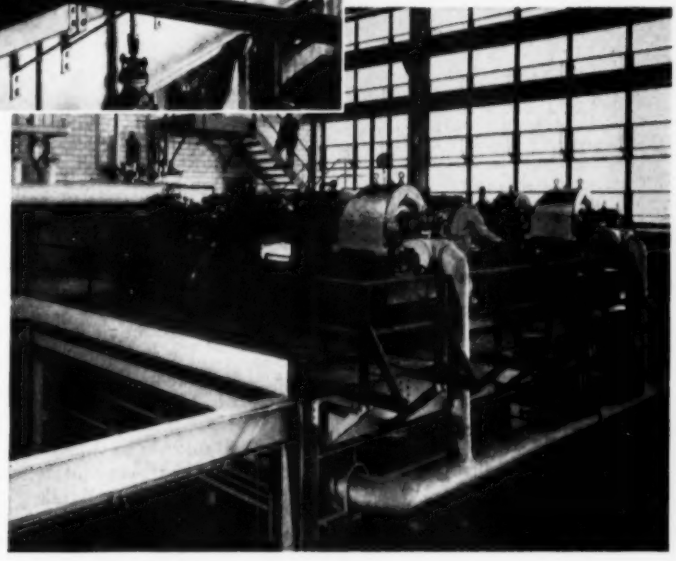

Views of Fuller Rotaries installed on balconies; overhead, out of the way. Left: Four two-stage; capacity each 1665 c.f.m., 100-lb. psig. Below: Two two-stage; capacity each 1592 c.f.m., 120-lb. psig.

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editorial

1953 Record Year for Pit and Quarry Industries

THIS January, 1954, Annual Review and Forecast Number begins the 39th year in which PIT AND QUARRY will keep its readers, the producers of non-metallic minerals, informed of conditions within and affecting these industries. In this issue we believe we are getting off to a flying start by presenting the latest and most complete information available at this time on the conditions in these industries in 1953 and prospects for 1954. We have assembled all available information from government bureaus and other recognized fact-finding bodies, from our own records and files, from an extensive questionnairing of these industries and from many other sources. Official reports on production, shipments, prices, etc., are available on only seven industries for even a part of 1953; complete reports for 1952 are available on a few more. Official reports for 1951 are available on most of the other industries, but there are a few young and rapidly-growing industries on which there is no official information of any kind. We believe, however, that with the help of hundreds of producers in these industries we are able to present a fairly accurate and complete picture of conditions in 1953 and of prospects for 1954.

REVIEW Although the information now available is incomplete it still seems certain that in 1953 the nonmetallic minerals industries forming the pit-and-quarry field had the biggest year in history. This achievement was at least partly due to the fact that the usual handicaps such as strikes and car, material, fuel and labor shortages, were negligible compared to other recent years. Another contributing factor was the new high of about $34,700,000,000 spent for new construction and the estimated $11,800,000,000 spent for maintenance and repair.

Industrial production was again up from the preceding year, judging from incomplete reports available, and is believed to have set a new record. The dollar value of production is estimated to have been about 7 percent above the 1952 total.

The portland cement industry in 1953 for the seventh consecutive year set new all-time records in production, shipments and the value of shipments. Bureau of Mines reports for the first 10 months of the year and estimates for the remainder indicate that production was about 6 percent and shipments about 4 percent over the 1952 record highs, to about 264,000,000 and 262,000,000 bbl., respectively. There were widespread price increases after price controls were removed early in the year and the mill value of shipments consequently reached a new high by a wide margin, but no accurate figures are yet available.

The latest official government figures on the production of sand and gravel, crushed stone, and most other aggregates, are for 1951 or earlier, but fairly accurate information is available to us from answers to a questionnaire sent to hundreds of established producers in all parts of the country. Our figures show that collectively these industries set a new record of production and value in 1953 as they did in 1952. The output of sand and gravel, slag and lightweight aggregates set all-time records but crushed stone was down from its 1952 all-time high and the output of agricultural limestone was again down from 1952.

The sand and gravel industry in 1953 produced an estimated 433,000,000 tons, about 3 percent over the estimated 1952 output of 420,000,000 tons which was also a new record. This includes both commercial and non-commercial production.

The crushed stone industry in 1953 is estimated to have produced about 292,000,000 tons, 2 percent less than the estimated 298,000,000 ton output in 1952 which remains the all-time high. These figures include both commercial and non-commercial production as well as agstone, but exclude the stone used in cement and lime manufacture. Agstone apparently continued the gradual downward trend which has existed for several years.

The slag industry was believed to have achieved in 1953 the first 30,000,000-ton year in the industry's history, an achievement which it might have realized in 1952 except for the prolonged steel strike which cut off raw material supplies for about 2 months. There were no serious handicaps to production in 1953.

The phenomenal growth of the lightweight aggregates industries (including expanded slag, expanded shale, perlite, vermiculite, etc.) apparently continued at an unabated pace in 1953. There are unfortunately, no accurate records of production but from our own sources of information we estimate production in 1953 to have been about 28,000,000 cu. yd., an increase of about 2,000,000 cu. yd. over 1952.

The information now available on the production of the other nonmetallic minerals industries in 1953 is even more incomplete but all indications point to a possible slight general increase in production over 1952. Partial 1953 information is available on only six of these industries and this shows that output in two of the largest—lime and phosphate—have set new records, with increases of about 17 and 12 percent, respectively, over the previous highs. The output of lime, over 8,500,000 tons, exceeded the 1952 record by a wide margin. Phosphate production was about 13,500,000 tons. The production of gypsum was apparently about 8,200,000 tons, down a little from 1952 and the 1951 peak. The production of fluorspar, bauxite, and sulphur was apparently off slightly from 1952.

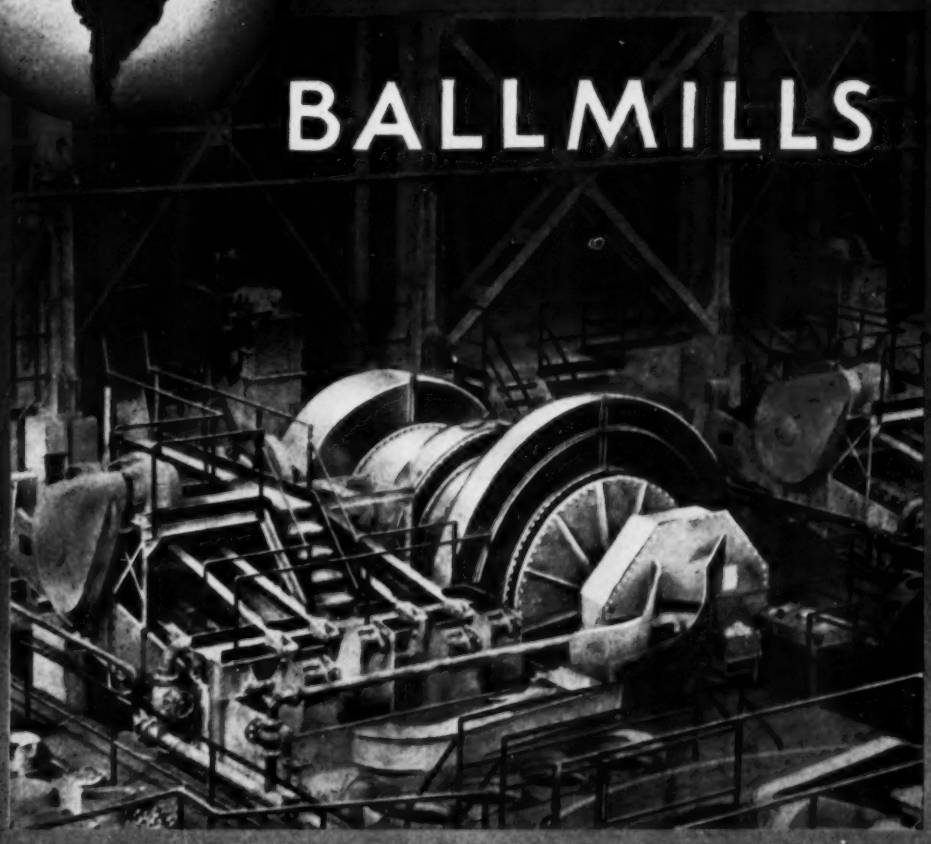
FORECAST It is always dangerous to attempt to forecast business conditions and the experts have been embarrassed a number of times in recent years, usually when they have predicted a sharp falling off in volume. According to the recognized authorities business in general is due to fall off slightly in 1954. According to the best-informed sources in the construction field there is to be a slight falling off in construction dollar volume. A majority of cement producers, basing their opinions largely on the two above factors, feel that cement shipments in 1954 will probably be equal to or slightly less than the 1953 peak. Aggregates producers and other producers of non-metallic minerals, also influenced by the above, make similar predictions except in a few industries where other factors enter into the picture.

It will be interesting to see how accurate these predictions are and how industry is affected by the comparative lack of controls and restrictions which now exists.

Walter E. Trauffer

SMIDTH

BALLMILLS



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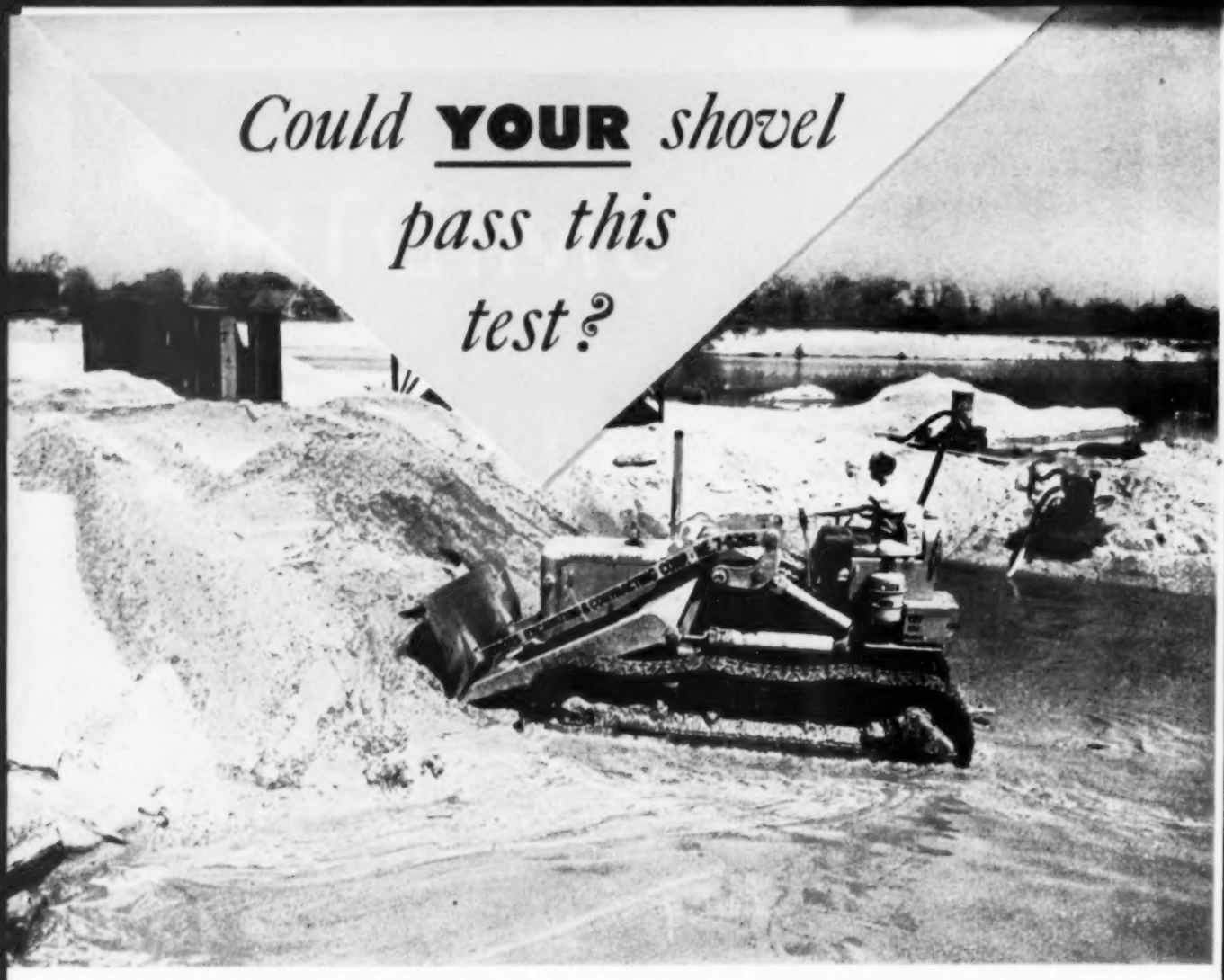

LOADING TRUCKS with sand and gravel, this Caterpillar No. 6 Shovel must often slug track frame-deep through abrasive muck. It's an extreme test of Caterpillar filters and seals, which protect factory-machined precision by keeping lubricants *in* and grit *out*.

It's also a test of the traction and balance of this newest shovel in the Caterpillar line. Tractor, engine and bucket are engineered as a unit so that tracks will not "dance" with even the heaviest loads. This No. 6 Shovel can work in areas too tight for a crane. "We decided on it from our previous experience with Cat® equipment, and because we needed one machine that would do several different jobs," says G. W. Bilzi of Heroes Excavating & Contracting Corp., East Meadow, Long Island, N. Y. The company is 75% standardized on Caterpillar products, with eight other Cat track-type Tractors.

Here are some of the other jobs this machine-of-many-uses can perform: load, stockpile, strip, 'doze, clean up and grade. It is compact and maneuverable for work in tight places. Controls are hydraulic for easy, accurate operation, and mounted low for excellent operator visibility. The two-yard bucket is simultaneously raised and dumped *clean* for fast cycle time. Thanks to its exclusive fuel injection system, the rugged Cat Diesel Engine delivers full and *foul-free* power at a cost of only pennies per hour with money-saving No. 2 furnace oil.

Your Caterpillar Dealer will demonstrate *on the job* the shovel that will do most work for you at lowest cost. Talk over your needs with him today. And count on him —any time, anywhere—for fast, skilled service and dependable Caterpillar parts.

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news of the industry

PIT AND QUARRY

Southern Cement Company Builds 1,000,000-Bbl. Plant To Be Opened This Year

According to an announcement released by W. J. Cabaniss, vice-president and treasurer of the Southern Cement Company, Birmingham, Ala., this firm is constructing a portland cement plant at Roberta, Ala. The new facilities, which will have a capacity of 1,000,000 bbl. annually, are expected to be completed by the middle of 1954.

Also located at Roberta is Southern Cement Company's lime plant, completed in 1950. A second rotary kiln was added in 1952, and the present capacity of this plant is approximately 400 tons of high-quality chemical-grade lime per day. Hydrating facilities can produce 150 tons of hydrated lime daily. By means of the company's special process, developed by its research department, lime from Shelby County, Ala., is now being made into a high-quality finishing lime for white coat plaster.

Edward I. Williams Heads Virginia Manufacturers Assn.

At the recent annual meeting of the Virginia Manufacturers Association, held at The Homestead, Hot Springs, Edward I. Williams, president of the Riverton Lime and Stone Company, Inc., Riverton, Va., was elected president.

Mr. Williams, who heads a concern with plants at Riverton and Piney River, Va., was educated at Columbia University, where he took a degree in mining engineering. Beginning his business and professional career in 1914, he was associated with the General Chemical Company as assistant superintendent and engineer. Thereafter he was successively superintendent at General Chemical's Gossan mines; smelter superintendent at the Tennessee Copper Company; in charge of operations and sales for the P. R. Mallory Company; sales manager and president of Riverton Lime & Stone.

In 1944 Mr. Williams became president of the Industrial Mineral Wool Association, and a year later president of the National Mineral Wool Association. During World War II he was chairman of the Mineral Wool Industry War Council and a member of the lime industry advisory committee of WFA, OPA, and WPB. In 1945 he was named a member of the advisory committee on aviation for the state of Virginia. At present he is a member of the Virginia Manufacturers Association's board of directors, the A.I.M.E. and the A.S.T.M.

E. I. Williams

Russell, Schemm, Kennedy Honored by Citations At University of Michigan

As a part of its observance of 100 years of engineering instruction at the University of Michigan, the College of Engineering awarded citations to 241 distinguished alumni at a convocation on October 23.

Among the citation winners were the following:

Walter Clair Russell, president of the board of directors of the Peerless Cement Corporation, Detroit, and past chairman of the board of directors of the Portland Cement Association. Mr. Russell was one of the first to organize an incentive plan for labor in a major industry.

Henry Ripley Schemm, vice-president in charge of operations, the Huron Portland Cement Company, Detroit. Mr. Schemm is responsible for improved manufacturing methods used in the cement industry.

George Donald Kennedy, executive vice-president of the Portland Cement Association, Chicago. Mr. Kennedy is a past president of the American Association of State Highway Officials, a former vice-president of the Automotive Safety Foundation, and formerly highway commissioner of the state of Michigan.

During the ceremony, Charles E. Wilson, Secretary of Defense, spoke on "The Continuing Frontier."

Coming Events

January 31-February 4, 1954—New York. 35th annual convention, Associated Equipment Distributors. Waldorf Hotel.

February 8-11, 1954—Washington, D. C. 34th Annual convention, National Concrete Masonry Association. Shoreham Hotel.

February 15-19, 1954 — Chicago. 38th annual convention, National Sand and Gravel Association and 24th annual convention, National Ready Mixed Concrete Association, with machinery expositions. Conrad Hilton Hotel.

February 19-20, 1954 — Chicago. Annual Convention, National Agricultural Limestone Institute, Inc. Blackstone Hotel.

February 22-24, 1954 — Chicago. 37th annual convention National Crushed Stone Association, with exposition. Conrad Hilton Hotel.

February 22-25, 1954 — Denver. Annual convention, American Concrete Institute. Shirley-Savoy Hotel.

February 24, 1954—San Francisco. 4th annual convention and meeting, American Concrete Agricultural Pipe Association. Fairmont Hotel.

February 25-27, 1954—San Francisco. 46th annual convention, American Concrete Pipe Association. Fairmont Hotel.

11-Month Building Total Passes Mark Set in 1954—Good Prospect in View

Good news for 1954 for the traffic-choked public, and for the enormous family bankroll that is fed by the construction industry, could be seen today in the November totals of Dodge reports of construction contract awards in the 37 states east of the Rockies, as announced by the F. W. Dodge Corporation.

Drivers could take comfort from the fact that a spurt in contracts in November brought the 11-month Dodge total for streets and highways to 21 percent over 11 months of 1952.

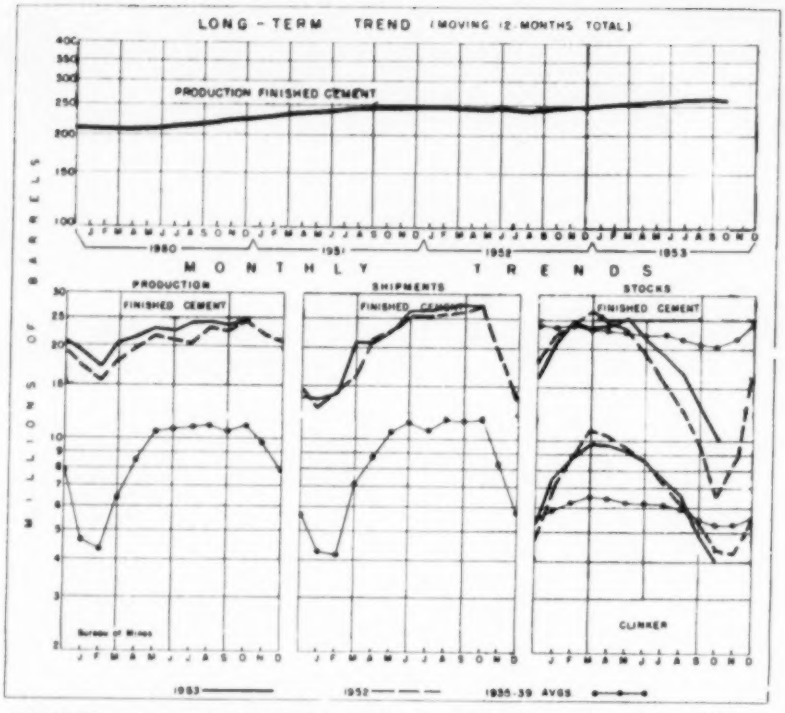
Those whose livelihood comes from construction would be cheered by near certain assurance that the first several months of 1954, at least, will continue the record-breaking job and sales activity of 1953. The projects now reported will be in process of construction for months to come, well into 1954.

The likelihood evident several months ago that the Dodge total for 1953 would at least tie the all-time high of 1952 was almost mathematically confirmed with the November total of $1,394,050,000, which brought Dodge's 11-month total to $16,-143,699,000, up 5 percent over the corresponding figure for 1952. The Dodge monthly total has not fallen below that amount since February, 1949.

Specifically, the streets and highways 11-month 1953 total was $1,584,507,000. Other classifications which helped boost the grand total for 11 months were: commercial building, $1,392,674,000, up 58 percent over 1952; educational building, $1,543,832,000, up 16 percent; religious building, $352,770,000, up 20 percent; social and recreational building, $207,-932,000, up 52 percent.

Individual totals for 11 months: nonresidential, $6,415,528,000, up 7 percent; residential, $6,045,643,000, down 3 percent; heavy engineering, $3,682,528,000, up 19 percent.

Individual November totals: nonresidential, $611,857,000, down 19 percent from October but 33 percent above November, 1952; residential, $484,168,000, down 24 percent from October and down 8 percent from November, 1952; heavy engineering (public and private works and utilities), $298,025,000, down 40 percent from October but up 15 percent over November, 1952.



SUMMARY — Production of finished portland cement in October, 1953, totaled 24,738,000 bbl., as reported to the U. S. Bureau of Mines — 2 percent more than in October, 1952. Mill shipments totaled 27,556,000 bbl. — a 1 percent increase from the October, 1952, figure — while stocks of 10,041,000 bbl. of finished portland cement at the end of the month were 53 percent higher than on the same date a year ago. Clinker production during the month totaled 23,874,000 bbl. — an increase of 3 percent from the October, 1952, clinker output.

PRODUCTION — One hundred and fifty-six (156) plants located in 37 states and Puerto Rico reported a production of 24,738,000 bbl. of finished portland cement during the month, compared to 155 plants which manufactured 24,164,000 bbl. during October, 1952. Clinker production during the month was 23,874,000 bbl., compared to 23,241,000 bbl. during the previous October.

SHIPMENTS — Mill shipments of finished portland cement were 1 percent higher than in October, 1952, and totaled 27,556,000 bbl. Shipments were higher in 10 districts and lower in 10 districts, as compared to shipments in October, 1952. Shipments were greater in all eastern and southern districts except the western Pennsylvania-West Virginia district, and lower in all western districts except eastern Missouri-Minnesota-South Dakota. Major percentage increases were in the Michigan, Indiana-Kentucky-Wisconsin, and Ohio districts, while the principal declines were in the Puerto Rico, Oregon-Washington, Iowa, southern California, and Texas districts.

STOCKS — Mill stocks of 10,041,000 bbl. of finished portland cement were on hand on October 31, 1953 — 53 percent more than were on hand at the end of October, 1952 — while stocks of clinker totaled 4,055,000 bbl. — 7 percent less than at the end of the previous October.

FCC to Amend Regulations On Plant Radio Eligibility

The Federal Communications Commission, on November 6, 1953, issued a notice of proposed changes in Part II of its Regulations — Rules Governing Industrial Radio Services.

The amendments to the rules proposed by the Commission which are of interest to nonmetals producers follow:

(1) Companies delivering and pouring ready-mixed concrete or hot asphalt mix are specifically designated as eligible to operate radio services (s11.508(a)(2).

(2) In its notice the Commission stated that companies engaged in sand and gravel delivery would not be eligible to operate radio services and distinguished such companies from those delivering concrete and asphalt mix on the ground that such products were of a perishable nature and proper timing of deliveries was essential to avoid loss.

(3) Ready-mixed concrete and asphalt mix companies will not be permitted to use radio in the conduct of other activities such as sand and gravel or lumber deliveries.

(4) The use of radio in the Special Industrial Radio category will continue to be limited to areas other than those that are defined in the census as Standard Metropolitan areas with population in excess of 500,000 people.

(5) There are extensive changes proposed in the available frequencies, the effect to which will have to be determined by each user or prospective user. Required changes in frequency must be accomplished within a period of one year after the proposed rules are made final.

(6) All persons presently licensed in the Special Industrial Radio Services who at the time of renewal of their licenses are found ineligible under the new rules will be given five years from the effective date of the new rules within which to amortize their equipment.

(7) No date has been established on which the proposed rules will become effective. Interested parties have until February 4, 1954, to submit further comments on the rules, and an argument before the Commission may be ordered following receipt of such comments.

Two Companies Acquired By Marquette Cement As Sales Subsidiaries

Marquette Cement Manufacturing Company has announced the outright purchase, effective January 1, 1954, of the Superior Cement Division of the New York Coal Company, which includes the plant at Superior, Ohio, and of Southern States Portland Cement Company, with its plant at Rockmart, Ga. The acquisition of these properties will rank Marquette among the five largest cement companies in the country.

Both the Superior and Southern States companies will continue in business, differing only in new incorporation as wholly-owned sales subsidiaries of Marquette. They will continue to operate under their original policies and brand names, and with essentially the same personnel. The plants of each company will, however, be operated by Marquette, oldest cement manufacturing concern in the Mississippi Valley and recognized as one of the most progressive and rapidly growing companies in the cement industry. These acquisitions will increase Marquette's annual cement producing capacity by approximately 2,000,000 bbl., equally divided between the two plants, and expand its marketing area to include the industrially rich and growing Ohio and Kanawha River Valleys (Ohio, West Virginia, and Kentucky) and all of the state of Georgia.

The Superior plant, located 15 miles east of Portsmouth, Ohio, has been in continuous operation since 1907. It is currently producing at the rate of approximately 800,000 bbl. annually. Marquette has announced plans to increase annual production there by 200,000 bbl. within the next year. To handle this output, a sales subsidiary, to be called Superior-Marquette Cement Company, will be immediately organized and will have its headquarters in Portsmouth, Ohio. W. B. Carter, formerly head of the sales staff for the Superior Cement Division, will continue as sales manager for this new subsidiary of Marquette.

The Southern States Portland Cement Company will also be operated henceforth as a sales subsidiary of Marquette, but its headquarters will be moved from Rockmart, Ga., where they are now located, to new quarters in downtown Atlanta. W. B. Elcock will continue as president of this company. J. O. Lane, formerly acting sales manager, has been appointed sales manager there. The Southern States plant at Rockmart has been in continuous operation since 1902. Now under Marquette, annual production there will be increased from the current 800,000 bbl. to approximately 1,000,000 bbl., it was announced.

Both the Ohio and Georgia plants will be immediately and substantially improved in a $3,580,000 modernization program authorized by Marquette's board of directors at the time of purchase.

Within little more than a decade Marquette Cement Manufacturing Company has grown from a three-plant organization into a multimillion-barrel network comprising eight producing plants, two shipping plants, nine sales offices, and five wholly-owned subsidiary companies covering the central and southern states. From 1898 to 1923 Marquette was a one-plant company. In 1923 it purchased a plant at Cape Girardeau, Mo. Five years later Marquette built its first shipping plant at Memphis, Tenn., and established its own barge line to transport cement in bulk to this plant from production sources. In 1929 the company extended its barge line operations to St. Louis, Mo., and there built another plant to facilitate distribution. In the meantime the plant at Oglesby, Ill., had been completely rebuilt and enormously expanded into one of the largest plants in the industry. In 1940 Marquette purchased the Hawkeye Portland Cement Company with its plant at Des Moines, Iowa. Six years later, the company acquired both the Hermitage Portland Cement Company and the Cumberland Portland Cement Company with their respective plants at Nashville and Cowan, Tenn. A new plant at Brandon, Miss., was completed by Marquette in 1951.

Both the Superior and Southern States transactions were closed for a total purchase price of $5,602,000, exclusive of working capital and inventories, it was announced. The individual purchase prices involved were not disclosed.

According to an announcement made recently by the National Slag Association, the new address of the association is now 613 Perpetual Building, Washington 4, D. C.

Cover Picture....

● Our January cover shows the recently-completed Hungry Horse dam and power plant located on the South Fork of the Flathead River in northwestern Montana near Glacier National Park. The dam, a key project in the U.S. Bureau of Reclamation's long-range program for developing the water resources of the Columbia River basin, is said to be the fourth-largest concrete dam in the world. It is 2,115 ft. long at its crest and 564 ft. high; in its construction about 3,000,000 cu. yd. of concrete and 5,600,000 tons of sand and gravel were required.

N.I.S.A. President Hardy Dies Unexpectedly, Dec. 6 At Evansville, Indiana

Cortner M. Hardy, owner of the Hardy Sand Company, Evansville, Ind., and president of the National Industrial Sand Association, died unexpectedly at his home in that city on December 6.

Mr. Hardy's firm, which he organized

Cortner M. Hardy

in 1910, operates plants in northern Indiana and in Tennessee. Associated with him in his business is his son Harry Hardy.

Election to the presidency of N.I.S.A. was evidence of the high regard in which Cortner Hardy was held by his friends in the association. He had been an active participant in its affairs from the time of its organization.

35th Annual A.E.D. Meeting To Convene in New York City

Virtually the entire construction equipment industry will gather in New York City to attend the 35th annual meeting of Associated Equipment Distributors, to be held January 31 through February 4 at the Waldorf Astoria Hotel.

Convention Chairman W. A. Patterson of Richards Equipment Company, Waco, Tex., recently announced that over 2,100 distributor and manufacturer members had registered for the 1954 meeting.

The five-day business and social program, opening February 1, will be preceded by several important meetings of committees and the board of directors on January 30. There will be distributor-manufacturer conferences on January 31.

The program for Monday, February 1, and each of the three days to follow, will feature a morning business session. Afternoons will be left free for individual distributor-manufacturer conferences at the Waldorf and Barclay hotels, co-headquarters for manufacturers. S. John Oechsle of Metalweld, Inc., Philadelphia, Pa., retiring International A.E.D. president, will open the Monday business session for distributor members.

Asphalt Institute Directors Name Harsch Chairman—Re-elect Gray President

At the annual board of directors meeting of the Asphalt Institute, held in New York on December 3, 1953, Raymond Harsch, manager of the Asphalt Department of the Shell Oil Company, San Francisco, was elected chairman of the executive committee, and Bernard E. Gray was re-elected president.

Vice-presidents elected for the five U. S. geographical divisions of the institute are

Raymond Harsch

as follows: George R. Christie, Socony-Vacuum Oil Company, Inc., Atlantic Coast Division; Lysle Walker, Leonard Refineries, Inc., Ohio-Great Lakes Division; Chester Eberle, Macmillan Petroleum Corporation (Arkansas), Mid-West Division; James J. Kelly, Kerr-McGee Oil Industries, Inc., Southwest Division; W. F. Lyte, Douglas Oil Company of California, Pacific Coast Division. These vice-presidents, together with Messrs. Harsch, Gray, and D. N. Myers of Byerlyte Corporation (ex-officio as retiring chairman), constitute the executive committee for the coming year.

Herbert Spencer was re-elected secretary of the institute; George R. Christie, Socony-Vacuum Oil Company, Inc., was re-elected treasurer; and John N. Smith, also of Socony-Vacuum Oil Company, Inc., assistant treasurer.

Slight Increase in Sales Of Lime Noted During July

In July, 1953, domestic sales of open-market lime (714,455 short tons) increased very slightly over the volume of the previous month, according to reports by producers to the U. S. Bureau of Mines. Agricultural and building uses decreased from the previous month, whereas increases were noted for refractory, chemical, and other industrial uses.

The accompanying table shows sales by types and major uses.

Bernard E. Gray

Canada Cement Co., Ltd. To Build Plant at Winnipeg

Officials of Canada Cement Company Limited, Montreal, Que., have announced plans to double the capacity of the firm's Fort Whyte, Man., plant.

It was indicated that the rehabilitation and enlargement program will result in a productive capacity "considerably greater than present demand would indicate as immediately necessary, but it is hoped that as population increases in Manitoba and district, the output will eventually be absorbed."

F. J. ANDERSON, superintendent of the Laramie plant of Monolith Portland Midwest Company, has been transferred to the Los Angeles office after serving as superintendent at Laramie for 25 years. His successor is Duncan R. Williamson, formerly his assistant.

Wisconsin Aglime Makers Organize New Association At Meeting in Madison

More than 60 Wisconsin producers of agricultural limestone met at the Park Hotel in Madison on November 23 and formed a new association to be known as the Wisconsin Aglime Producers Association.

Loren D. Nellis of Nellis Limestone Quarry, Inc., Ripon, was elected president of the association. The other officers elected are as follows: vice-president, Stewart Watson, Wingra Stone Company, Madison; treasurer, Ervin Ellefson, Ellefson Bros., Viroqua; secretary Charles Coburn, Waukesha Lime & Stone Company, Incorporated, Waukesha.

On the following day the group met with the Wisconsin A. S. C. Committee, as well as representatives of the College of Agriculture and the Soil Conservation Service for the purpose of discussing the 1954 Agricultural Conservation Program. Robert M. Koch, executive secretary of the National Agricultural Limestone Association, Inc., described the national program.

$200,000 Loss Incurred In Fire at S.D. Lithium Mill

A $200,000 fire destroyed the lithium mill of the Tinton Mining Company at Tinton, S. D., on November 28. The blaze broke out in the drying room where the night shift was processing spodumene at about 5 a.m.

The loss incurred included damage estimated at about $185,000 to machinery. The plant had been operated on a lease for the last three months by the Bald Mountain Mining Company, and it was the sole occupation of Tinton residents. It was destroyed by fire in 1941 and rebuilt in 1942. Tinton is near the South Dakota-Wyoming border.

Lime Sold by Producers in the United States, in Specified Periods of 1952–53, by Types and Major Uses, in Short Tons[1]

	June	July		January–July	
	1953	1953	1952	1952	1953
By types:					
Quicklime	550,949	559,750	328,448	3,198,072	3,888,379
Hydrated lime	160,016	154,705	144,117	1,078,558	1,102,879
Total lime[2]	710,965	714,455	472,565	4,276,630	4,991,258
By uses:					
Agricultural:					
Quicklime	1,869	2,575	3,009	31,546	34,102
Hydrated lime	14,217	10,367	9,742	132,333	126,746
Total	16,086	12,942	12,751	163,879	160,746
Building:					
Quicklime	18,284	14,366	19,229	121,691	112,280
Hydrated lime	82,294	80,952	82,523	535,387	535,263
Total	100,578	95,318	101,752	657,078	647,543
Chemical and other industrial:					
Quicklime	336,576	338,543	247,192	2,090,484	2,365,658
Hydrated lime	63,505	63,386	51,852	410,838	440,972
Total	400,081	401,929	299,044	2,501,322	2,806,630
Refractory (dead-burned dolomite)	194,220	204,266	59,018	954,351	1,376,339

[1] Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics.
[2] Approximately 60 percent of lime produced in high-calcium and 40 percent high-magnesium.

Announcing
Major Advance in
Tractor Design!

New Caterpillar oil-type flywheel clutch

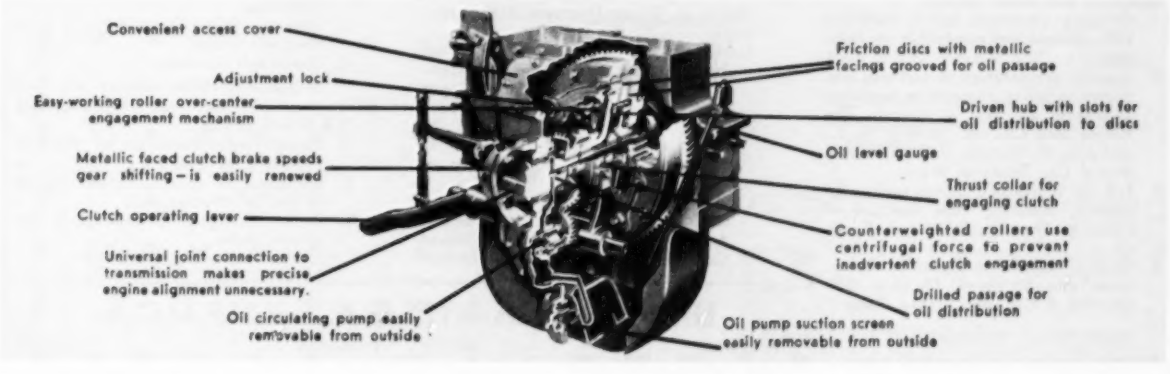
now standard in the D8, D7 and D6!

Once again Caterpillar leads the field in an advance that boosts production, cuts down time and lowers operating costs. The new oil-type flywheel clutch, now standard in the Cat* D8, D7 and D6 Tractors, means a new high in money-making performance for you from these three rugged machines. Exhaustive on-the-job tests prove that this clutch lasts many times longer than other clutches under *identical* conditions. They also prove it enables you to run these tractors two to four times longer before making clutch adjustments.

Here's how it works. The oil system is entirely separate from that of the engine. While the engine is running, the oil pressure flows to all working parts of the clutch. Oil is fed constantly through the radial and circumferential grooves in the friction discs even when the clutch is engaged, thus cooling the friction discs and pressure plates at all times. As a result, there's minimum opportunity for wear and heating to take place. That's why adjustments are very seldom needed and disc replacement normally required no more often than engine overhauls. For easy access, the clutch has a dirt-proof housing with a big opening at the top—a mechanic doesn't have to disturb engine or transmission to get at it.

Get the whole picture from your Caterpillar Dealer. Remember, he backs all sturdy yellow equipment with genuine parts service—there's never an "orphan" in the Caterpillar line. Ask him to demonstrate on the job!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.


Convenient access cover
Adjustment lock
Easy-working roller over-center engagement mechanism
Metallic faced clutch brake speeds gear shifting—is easily renewed
Clutch operating lever
Universal joint connection to transmission makes precise engine alignment unnecessary.
Oil circulating pump easily removable from outside
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Driven hub with slots for oil distribution to discs
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Thrust collar for engaging clutch
Counterweighted rollers use centrifugal force to prevent inadvertent clutch engagement
Drilled passage for oil distribution
Oil pump suction screen easily removable from outside

New Caterpillar oil-type flywheel clutch gives you greater dependability and lower service and maintenance costs than any other clutch under identical conditions, normal or tough.

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N.S.G.A.-N.R.M.C.A. Convention Program

Conrad Hilton Hotel, Chicago, Ill., Feb. 15-19, 1954

SUNDAY, FEBRUARY 14

2:00 p.m.—4:00 p.m.—Meeting of exhibitors, North Ballroom

4:00-6:00—Joint meeting of two Executive Committees

MONDAY, FEBRUARY 15

9:30 a.m.—12—Meeting of N.S.G.A. Board

12:30 p.m.—2 p.m.—Joint luncheon of two Boards

2:00-5:00—Meeting of N.R.M.C.A. Board

2:00-5:00—Conference of executives of state, area and district associations

2:00—Opening of biennial exhibit

TUESDAY, FEBRUARY 16

Morning Session, starting at 10:00 a.m.

Simultaneous sessions of National Sand and Gravel Association and National Ready Mixed Concrete Association, with following items applicable to each session:

1. Address of the president
2. Report of nominating committee and election of officers
3. Presentation of safety trophies and five-minute speech by each of the three winners

Afternoon Session, starting at 2:00 p.m.

Joint session of two Associations.

1. "Freeway Construction Program in the Los Angeles Metropolitan Area" by Harrison R. Baker, vice chairman, California Highway Commission
2. "Federal-aid Highway Principle" by G. Donald Kennedy, executive vice-president, Portland Cement Association
3. "The Taxation Program which Congress Will Consider in 1954" by John T. Sapienza, Counsel for National Sand and Gravel Association and National Ready Mixed Concrete Association

WEDNESDAY, FEBRUARY 17

Morning Session, starting at 9:30 a.m.

Separate N.S.G.A. session on percentage depletion and allied matters:

1. Opening statement by J. Rutledge Hill, chairman of committee on taxation
2. Specific presentation of methods employed in taking percentage depletion allowances by Paul J. Kremer, The Buffalo Slag Co., Inc., Buffalo, N. Y., and John W. Murphy, Union Sand and Gravel Co., Spokane, Wash.
3. Talk on Workman's Compensation Insurance, including New Problem of Noise, by Theodore C. Waters, Counsel
4. Existing Practice in States on Severance Taxes, by Harold M. Lacy, Gifford-Hill & Co., Inc., Dallas, Texas

WEDNESDAY, FEBRUARY 17

Morning Session, starting at 9:30 a.m.

Separate N.R.M.C.A. Session on Operating Problems:

1. The new Standards of the Truck Mixer Manufacturers Bureau, the new Standards of the National Ready Mixed Concrete Association, and A.S.T.M. Ready Mixed Concrete Standards, by Robert W. Smith, Chairman of the Truck Mixer Manufacturers Bureau
2. The Truck Mixer Tests of the Association, by Stanton Walker, director of engineering
3. Fly Ash and Other Admixtures, by Delmar L. Bloem, assistant director of engineering
4. Ready Mixed Concrete Sampling and Testing, by Fred F. Bartel, Tews Lime and Cement Company, Milwaukee, Wis.
5. Report on Revolution Counters, by Stanton Walker, Wm. J. Hicklin, Jr., Capitol Concrete Co., Jacksonville, Fla., and John B. Donovan, Valentine Concrete Company, Inc., Springfield, Mass.
6. Round Table Discussion on Compliance with Specifications in General and Strength Specifications in Particular

12:30-2:00 p.m.—Joint Luncheon of two Associations.

Herbert G. Jahncke, president, National Ready Mixed Concrete Association, will preside.

Presentation to Stephen Stepanian of Honorary Membership on Board of Directors of National Ready Mixed Concrete Association.

Address by the Honorable W. Sterling Cole, chairman of the joint Congressional Committee on Atomic Energy.

WEDNESDAY, FEBRUARY 17

Afternoon Session, starting at 2:00 p.m.

Separate N.S.G.A. session on Merchandising Problems:

1. Presiding Officer will be Charles E. Brady, Manager, Material Sales Company, Salisbury, N. C., who will discuss possibility of developing standard clauses for sales agreements in sand and gravel industry.
2. General discussion of sand and gravel merchandising problems.
3. General discussion of practices in industry with reference to compensation of salesmen.
4. Discussion by engineering staff of laboratory tests pertaining to sand and gravel.

Simultaneous joint N.S.G.A. and N.R.M.C.A. session on Group Insurance and Pension Plans:

1. Address by Donald Shepherd, John Hancock Mutual Life Insurance Company, Boston, Mass., on Group Insurance and Pension Plans.
2. Report by Kenneth E. Tobin, Jr., Group Insurance Administrator, on First Nine Months of Operation of Group Insurance Plan.
3. Address by W. Crosby Roper, Jr., counsel for National Sand and Gravel Association and National Ready Mixed Concrete Association, on Application of Taft-Hartley Act to Group Insurance and Pension Plans.
4. General discussion.

THURSDAY, FEBRUARY 18

Morning Session, starting at 9:30 a.m.

N.R.M.C.A. session on Merchandising:

1. Presiding Officer will be Robert C. Collins, general sales manager, Warner Company, Philadelphia, who will present new Association publication on "Standard Clauses for Sales Agreements."
2. Presentation of literature for use of producers in developing wider markets for ready mixed concrete.
3. Presentation of results of surveys of customer attitudes toward ready mixed concrete.

Simultaneous joint N.S.G.A. and N.R.M.C.A. session:

1. Presiding Officer will be John W. Murphy, who will lead discussion on cost determination in sand and gravel and ready mixed concrete industries. Other participants will be Eugene J. Halter, J. K. Davison & Bro., Pittsburgh, and Paul J. Kremer.
2. General discussion of depreciation practices in the two industries.
3. General discussion of zoning problems.

Afternoon Session, starting at 2:00 p.m.

Joint N.S.G.A. and N.R.M.C.A. session on:

1. Strike problem in 1953 and prospects for 1954, with discussions led by members who experienced serious strikes in 1953.
2. "Enlistment of Community Support for Industry in Strike Situations" by Fred J. Grace, Jr., Baton Rouge Sand and Gravel Company, Baton Rouge, La.
3. Talk by W. Crosby Roper, Jr., on "Use of Reciprocal Lockout by Employers Under Existing Statutes and Court Decisions."

THURSDAY, FEBRUARY 18

Afternoon Session, starting at 2:00 p.m.

Simultaneous N.S.G.A. session on Operations—a Session of Open Forum Discussion:

1. Retention of Fines in Sand. Discussion led by M. C. Evans, Becker County Sand and Gravel Company, Cheraw, S. C., and Robert H. Klossner of Texas Construction Material Co., Houston, Texas.
2. Production of Fines by Crushing and Grinding.
3. Removal of Deleterious Particles from Sand and Gravel.
4. Use of Belt Conveyors.

FRIDAY, FEBRUARY 19

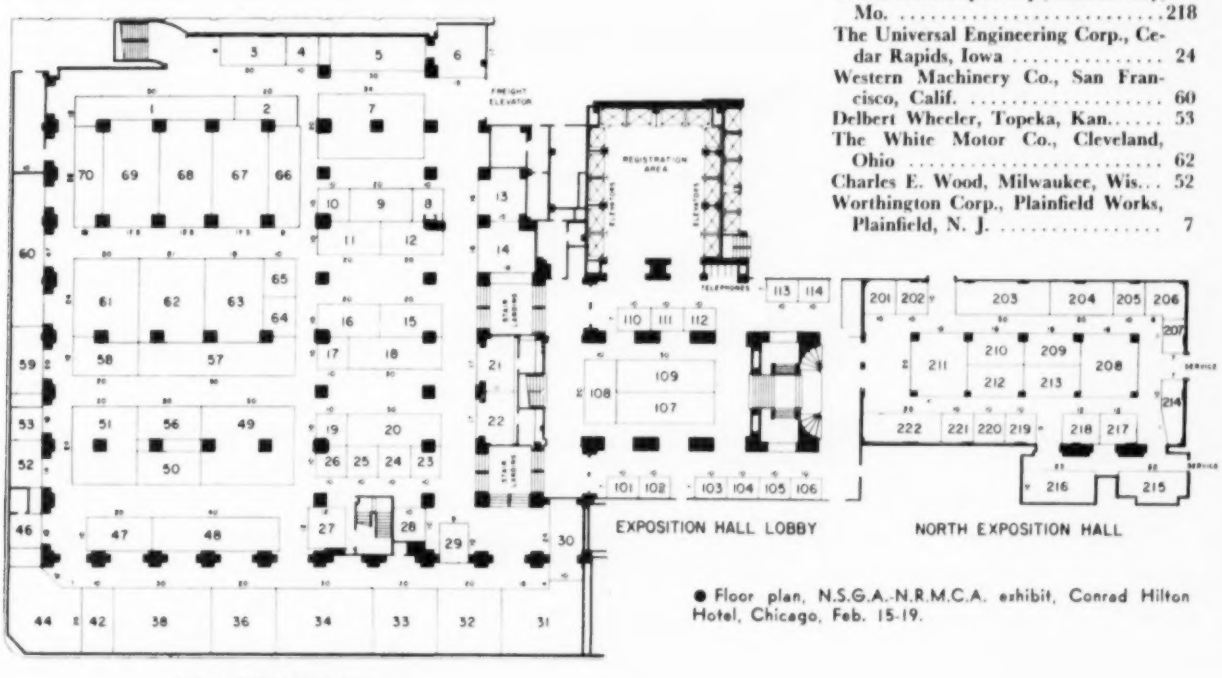
9:30 a.m.—12:30 p.m.—Joint N.S.G.A. and N.R.M.C.A. session:

1. Round table discussion of business prospects in 1954.
2. Discussion of what Congress will do to the Taft-Hartley Act.
3. Review of legislative problems in the various States.
4. Miscellaneous and adjournment.

List of Exhibitors — N.S.G.A. and N.R.M.C.A.

COMPANY	BOOTH
Allis-Chalmers Manufacturing Co., Milwaukee, Wis.	49
American Manganese Steel Division, American Brake Shoe Co., Chicago Heights, Ill.	20
Autolene Lubricants Co., Denver, Colo.	108
The Baker-Lull Corp., Minneapolis, Minn.	36
Baldwin-Lima-Hamilton Corp., Construction Equipment Division, Lima, Ohio	107
Barber-Greene Co., Aurora, Ill.	48
Blaw-Knox Equipment Div., Blaw-Knox Co., Pittsburgh, Pa.	69
Bucyrus-Erie Co., S. Milwaukee, Wis.	211
The Buda Co., Harvey, Ill.	27
L. Burmeister Co., Milwaukee, Wis.	217
Butler Bin Co., Waukesha, Wis.	22
Calcium Chloride Institute, Washington, D. C.	221
Caterpillar Tractor Co., Peoria, Ill.	33
Challenge Manufacturing Co., Los Angeles, Calif.	67

COMPANY	BOOTH
Chain Belt Co., Milwaukee, Wis.	34
Chicago Fly Ash Co., Chicago, Ill.	101
Cleaver-Brooks Co., Milwaukee, Wis.	66
Concrete Publishing Corp., Chicago, Ill.	105
Concrete Transport Mixer Co., St. Louis, Mo.	51
Construction Machinery Co., Waterloo, Iowa	63
Continental Motors Corp., Muskegon, Mich.	42
Contractors and Engineers Monthly, New York, N. Y.	111
Cook Brothers Equipment Co., Los Angeles, Calif.	67
Cross Engineering Co., Carbondale, Pa.	21
Cummins Engine Co., Inc., Columbus, Ind.	5
Deister Machine Co., Fort Wayne, Ind.	47
Dewey and Almy Chemical Co., Cambridge, Mass.	208
Diamond Iron Works, Inc., Minneapolis, Minn.	204
Eagle Iron Works, Des Moines, Iowa	213
The Euclid Road Machinery Co., Cleveland, Ohio	2
Flexible Steel Lacing Co., Chicago, Ill.	222
Gatke Corp., Chicago, Ill.	106
General Electric Co., Visual Education Section, Schenectady, N. Y.	28
Gruendler Crusher & Pulverizer Co., St. Louis, Mo.	202
Gulf Oil Corp., Pittsburgh, Pa.	29
George Haiss Manufacturing Co., Inc., Div. of Pettibone Mulliken Corp., New York, N. Y.	23
Hardy Scales Co., Maywood, Calif.	19
Harnischfeger Corp., Milwaukee, Wis.	18
Harristeel Products Co., New York, N. Y.	26
The Heltzel Steel Form & Iron Co., Warren, Ohio	216
Hendrick Manufacturing Co., Carbondale, Pa.	56
Hercules Motors Corp., Canton, Ohio	70
Hewitt-Robins, Inc., Passaic, N. J.	57
The Frank G. Hough Co., Libertyville, Ill.	65
Imperial Construction Equipment Co., Melrose Park, Ill.	44
International Business Machines Corp., New York, N. Y.	103
Iowa Manufacturing Co., Cedar Rapids, Iowa	50
The Jaeger Machine Co., Columbus, Ohio	38
The C. S. Johnson Co., Champaign, Ill.	32
Kensington Steel Co., Chicago, Ill.	13
Kochring Co., Milwaukee, Wis.	32
Le Roi Co., Milwaukee, Wis.	1
Link-Belt Co., Chicago, Ill.	11
Link-Belt Speeder Corp., Cedar Rapids, Iowa	59
Littleford Bros., Inc., Cincinnati, Ohio	64
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.	205
McLanahan & Stone Corp., Hollidaysburg, Pa.	4
Mack Motor Truck Corp., New York, N. Y.	68
Marion Power Shovel Co., Marion, Ohio	209
The Master Builders Co., Cleveland, Ohio	203 and 210
W. R. Meadows, Inc., Elgin, Ill.	110
Morris Machine Works, Baldwinsville, N. Y.	10
Murphy Diesel Co., Milwaukee, Wis.	31
Nordberg Manufacturing Co., Milwaukee, Wis.	12
Northwest Engineering Co., Chicago, Ill.	109
Pettibone Mulliken Corp., Chicago, Ill.	25
Pick Manufacturing Co., West Bend, Wis.	220
Pioneer Engineering Works, Inc., Minneapolis, Minn.	14
Pit and Quarry, Chicago, Ill.	113
Productive Equipment Corp., Chicago, Ill.	6
Quaker Rubber Corp., Division of H. K. Porter Co., Inc., of Pittsburgh, Philadelphia, Pa.	201
Rocform Corp., Detroit, Mich.	104
Rock Products, Chicago, Ill.	102
Sauerman Bros., Inc., Chicago, Ill.	212
Scientific Concrete Service Corp., Elizabeth, N. J.	207
Screen Equipment Co., Inc., Buffalo, N. Y.	3
Servicised Products Corp., Chicago, Ill.	114
Sika Chemical Corp., Passaic, N. J.	219
Simplex Forms System, Inc., Loves Park, Ill.	112
Simplicity Engineering Co., Durand, Mich.	58
Smith Engineering Works, Milwaukee, Wis.	15
The T. L. Smith Co., Milwaukee, Wis.	61
Solvay Process Division, Allied Chemical & Dye Corp., New York, N. Y.	206
Stedman Foundry & Machine Co., Inc., Aurora, Ind.	9
Stephens-Adamson Manufacturing Co., Los Angeles, Calif.	16
Symons Clamp & Manufacturing Co., Chicago, Ill.	214
W. O. & M. W. Talcott, Inc., Providence, R. I.	46
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.	17
The Thew Shovel Co., Lorain, Ohio	215
Timken-Detroit Axle Div. of Rockwell Spring & Axle Co., Detroit, Mich.	8
The W. S. Tyler Co., Cleveland, Ohio	30
Union Wire Rope Corp., Kansas City, Mo.	218
The Universal Engineering Corp., Cedar Rapids, Iowa	24
Western Machinery Co., San Francisco, Calif.	60
Delbert Wheeler, Topeka, Kan.	53
The White Motor Co., Cleveland, Ohio	62
Charles E. Wood, Milwaukee, Wis.	52
Worthington Corp., Plainfield Works, Plainfield, N. J.	7



● Floor plan, N.S.G.A.-N.R.M.C.A. exhibit, Conrad Hilton Hotel, Chicago, Feb. 15-19.

National Crushed Stone Assn. Convention Program

Conrad Hilton Hotel, Chicago, Ill., Feb. 22-24

SUNDAY, FEBRUARY 21

9:00 a.m.-5:30 p.m.—Registration
10:00 a.m.—Meeting of Manufacturers' Division Board of Directors
2:00 p.m.—Meeting of N.C.S.A. Board of Directors

MONDAY, FEBRUARY 22

8:30 a.m.-5:30 p.m.—Registration
Morning Session
9:15—Moving Picture
10:00—Greetings from the President—H. C. Krause
10:10—Report of elections by Board of Directors
10:15—Report of business conditions during 1953 and the outlook for 1954—a summary of reports of regional vice presidents, presented by the President—H. C. Krause
10:30—Report of engineering director—A. T. Goldbeck
10:50—Report of field engineer—J. E. Gray
11:10—Report of administrative director—J. R. Boyd
11:30—"Selling to Defend America"—Ralph W. Carney, former vice president in charge of marketing, Colemand Company, Inc., Wichita, Kans.
12:00—Adjournment
12:30 p.m.—Greeting Luncheon
Luncheon Address — "The Constitution Is Your Business" — Clarence Manion, Former Dean, University of Notre Dame College of Law; and Chairman of Commission on Inter-Governmental Relations, South Bend, Ind.

Afternoon Session
2:30-5:30—Inspection of Manufacturers Division Exposition, Exposition Hall
Evening
6:30—Cocktails and Buffet Dinner followed by Dancing

TUESDAY, FEBRUARY 23

8:30 a.m.-5:30 p.m.—Registration
Morning Session
Operating Men and Equipment Manufacturers
8:45—Moving Picture
9:00-12:00—Panel Discussion — Specially selected topics of particular interest to operating men—followed by full opportunity for questions and answers.
12:00—Adjournment
12:30 p.m.—Manufacturers Division Luncheon and Manufacturers Division Annual Business Meeting (for members of the Manufacturers Division only)

Afternoon Session
2:30—N.C.S.A. Committee Reports
3:00—Report on Percentage Depletion—Russell Rarey, Chairman N.C.S.A. Percentage Depletion Committee; President, Marble Cliff Quarries Company, Columbus, Ohio
3:20—Discussion
3:30—"The Plant Control of Bituminous Concrete"—Speaker to be obtained
4:00—"America, The Constructive World Force"—Richard Thomas, news analyst, foreign correspondent, and member of staff of New York Times, New York, N. Y.
4:30—Adjournment
5:00-6:00—Get-Together for Manufacturers Division New Board of Directors
6:30—Meeting of Accident Prevention Committee (Dinner)

Evening
Open for such special meetings as may be called by individual groups.

WEDNESDAY, FEBRUARY 24

8:30 a.m.-5:30 p.m.—Registration
9:00-12:00—Inspection of Manufacturers Division Exposition—Exposition Hall
12:30 p.m.—General Luncheon
Presentation of N.C.S.A. safety contest awards—J. J. Forbes, Director, United States Bureau of Mines, Department of the Interior, Washington, D. C.
Luncheon Address—"You Are Better Than You Sound"—Lucile La Chapelle, outstanding speaker — humorous, witty, charming — noted authority on the importance of voice and personality in everyday life; Chicago, Ill.

Afternoon Session
3:00—"Current Legislative Developments of Particular Interest to Crushed Stone Producers"—John F. Lane, Gall, Lane and Howe, Washington, D. C., General Counsel, National Crushed Stone Association
3:30—"A Public Relations Program"—Wilson P. Foss, III, President, New York Trap Rock Corporation, New York, N. Y.
4:00—"Construction Features of the 1953 Indiana Test Road"
(a) Rigid Type Pavement
(b) Flexible Type Pavement
—W. T. Spencer, Soils Engineer of Materials and Tests, Indiana State Highway Commission, Indianapolis, Ind.
4:30—Adjournment

Evening
6:00—Reception
7:00—Banquet
Banquet Address—"Behind and Beyond Today"—Jeff Williams, philosopher, humorist, and reconteur of International fame

National Agricultural Limestone Institute Convention Program

Blackstone Hotel, Chicago, Ill., Feb. 19 and 20

FRIDAY, FEBRUARY 19
MORNING SESSION — 9:00 a.m.
HUBBARD ROOM

Presiding—President K. K. Kinsey
Registration—Outside Hubbard Room
Movie—"Grass," new U.S.D.A. film on grasslands farming
Call to order and welcome by president
Reading of minutes of previous meeting
Treasurer's report—Alvin R. Armbrust
Report of committee chairmen
Audit and Finance—C. A. Munz
Membership—Leonard S. Fry
Legislative—John M. Deely
Percentage Depletion—H. C. Krause
Promotion—W. E. Stone
Executive secretary's report—Robert M. Koch
Old business
New business
12:00 Noon—Adjournment

GREETING LUNCHEON — 12:30 p.m.
BALL ROOM

Presiding—Director J. E. Ott
"Operation Twilight" by Charles E. Irvin

AFTERNOON SESSION — 2:30 p.m.
HUBBARD ROOM

Presiding—Vice-president John M. Deely
Meeting of members in five regional groups to nominate directors and regional vice presidents (Region I—States east of II and III and Canada; Region II—Kentucky, Indiana, Michigan, Ohio; Region III—Alabama, Arkansas, Louisiana, Mississippi, Missouri, Tennessee; Region IV—Illinois, Minnesota, Wisconsin; and Region V—States west of III and IV and Mexico.)
3:00 p.m.—"The Importance of Lime in a Long-Time Program of Soil Conservation and Fertility Maintenance," by C. J. Chapman
4:00 p.m.—Report of nominating committee and resolutions committee

EVENING PROGRAM
MAYFAIR ROOM

6:00 p.m.—Cocktails
7:00 p.m.—Buffet supper
8:30 p.m.—Dancing

SATURDAY, FEBRUARY 20
MORNING SESSION
GREEN ROOM

8:00 a.m.—Newly-elected Board of Directors' Breakfast

HUBBARD ROOM

9:00 a.m.—Movie, "Grasslands Farming," a March of Time film
9:30 a.m.—Panel on operations
Chairman—Leo L. Davis
Participants—M. R. Ackland, C. E. Hogeboom, Rollie Schneckloth

LUNCHEON — 12:30 p.m.
BALL ROOM

Presiding—Director Earl L. Heckathorn
"Promotions Pay Profits," by Dixon I. Harper, farm news director of the Prairie Farmer Station WLS.

AFTERNOON SESSION
HUBBARD ROOM

2:30 p.m.—Panel on promotion—"What I Have Done To Promote The Sale of Aglime To Offset The Reduction in The ACP"
Presiding Chairman—Russell W. Hunt
Participants—Charles Coburn, William D. Dillon, and Lynn Stewart

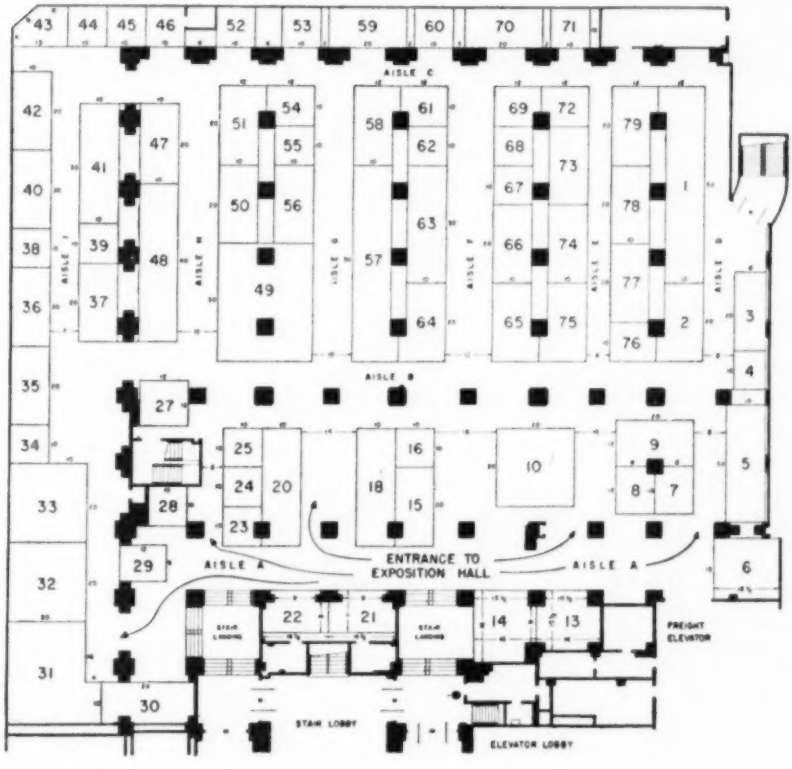
EVENING SESSION
BALL ROOM

6:00 p.m.—Reception for members and guests
7:00 p.m.—Annual banquet
"Mind Your Own Business!" — Address by Charles M. Hanna

List of Exhibitors — N.C.S.A.

COMPANY	BOOTH
Allis-Chalmers Mfg. Co.	49
American Cyanamid Co.	59
American Manganese Steel Division American Brake Shoe Co.	20
Atlas Powder Co.	70
Baldwin-Lima-Hamilton Corp. Construction Equipment Division	41
Barber-Greene Co.	48
Bucyrus-Erie Co.	10
Buda Co.	27
Cape Ann Anchor & Forge Co.	71
Caterpillar Tractor Co.	33
Cross Engineering Co.	21
Cummins Engine Co., Inc.	5
Deister Machine Co.	47
Diamond Iron Works, Inc.	77
Du Pont, E. I., de Nemours & Co., Inc.	52
Eagle Iron Works	22
Easton Car & Construction Co.	51
Euclid Road Machinery Co.	2
Frog, Switch & Mfg. Co.	7
General Electric Co.	28
Gruendler Crusher and Pulverizer Co.	69
Gulf Oil Corp. Gulf Refining Co.	29
Haiss, George, Mfg. Co., Inc. Div. of Pettibone Mulliken Corp.	23
Harnischfeger Corp.	18
HarriSteel Products Co.	16
Hendrick Manufacturing Co.	56
Hercules Powder Co.	42
Hetherington & Berner Inc.	67
Hewitt-Robins, Incorporated	57
Iowa Manufacturing Co.	50
Jeffrey Manufacturing Co.	40
Johnson-March Corp.	55
Joy Manufacturing Co.	9
Kennedy-Van Saun Mfg. & Eng. Corp.	8
Kensington Steel Co.	13
Kochring Co.	32
Cleveland Rock Drill Division LeRoi Co.	1
Link-Belt Co.	65
Ludlow-Saylor Wire Cloth Co.	62
Marion Power Shovel Co.	75
McLanahan & Stone Corp.	4
Murphy Diesel Co.	31
Nordberg Mfg. Co.	73
Northern Blower Co.	61
Northwest Engineering Co.	63
Pettibone Mulliken Corp.	25
Pioneer Engineering Works, Inc.	14
Pit and Quarry Publications, Inc.	38
Productive Equipment Corp.	6
Radio Corporation of America	60
Rock Products	34
Screen Equipment Co., Inc.	3
Simplicity Engineering Co.	58
SKF Industries, Inc.	64
Smith Engineering Works	15
Stedman Foundry & Machine Co., Inc.	35
Stephens-Adamson Mfg. Co.	78
Talcott, W. O. & M. W., Inc.	46
Taylor-Wharton Iron & Steel Co.	76
Thew Shovel Co.	37
Torrington Co. Bantam Bearings Div.	74
Travel Drill Co.	72
Traylor Engineering & Mfg. Co.	66
Tyler, W. S., Co.	30
Unit Crane & Shovel Corp.	79
Universal Engineering Corp.	24
Vibration Measurement Engineers	39
Wheeler, Delbert	53

Floor plan, N.C.S.A. Manufacturers Division exhibit, Conrad Hilton Hotel, Chicago, Feb. 22-24.



Davison Chemical Corp. To Begin Production Soon At Superphosphate Plant

Production of sulphuric acid at Bartow, Fla., will be started early in January, 1954, by The Davison Chemical Corporation as the first step in placing in operation the company's new $12,000,000 triple superphosphate plant at that site. Output of acid will precede main process operation by about two weeks.

Rated capacity of the acid unit, 550 tons of 100 percent sulphuric acid per calendar day, will make it the world's largest unit producing this chemical, according to records of Monsanto Chemical Company, designers of the plant. The contact process is employed, under which sulphur is burned to give sulphur dioxide, which is converted by catalytic contact to sulphur trioxide. This is then absorbed to give sulphuric acid. Heat developed in the reaction is used to produce steam which powers many pieces of equipment in the triple superphosphate and acid plants.

Capacity of the triple superphosphate plant is rated at 200,000 tons annually, which is estimated to make Davidson the second largest producer of this chemical. Initially, the entire output of the acid unit will be required in the main process. Later, there may be a surplus of acid for sale.

Goodman Mfg. Takes Over Diamond Iron Works Line

Ownership and control of the road machinery line made by Diamond Iron Works, Minneapolis, has been assumed by Goodman Mfg. Co., Chicago. The line, made since 1880, includes crushing, washing and screening equipment, portable plants, conveyors and bins.

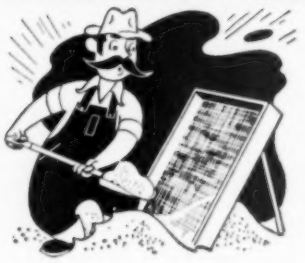
A natural expansion for Goodman, manufacturers of mining and tunneling equipment for 50 years, the Minneapolis activities will be absorbed into the Chicago operations by mid-February. The identity of the line will be continued, however, as "Diamond Iron Works — a division of Goodman Mfg. Co.". Carl E. Hanson, sales manager, heads a group of key personnel transferring to Chicago.

Canadian Asbestos Firms Enter Operating Agreement

United Asbestos Corporation, Ltd., Montreal, Que., Canada, recently announced that its board of directors approved an agreement with Lake Asbestos of Quebec, Ltd., by which the latter agrees to equip United's properties and place them on an operating basis.

According to the announcement, however, the major expenditures or performances of other obligations shall not be required of Lake Asbestos "until a satisfactory Quebec order-in-council is passed which authorizes the draining of Black Lake (near Asbestos, Que.), construction of dams, etc., in accordance with plans and specifications filed by United."

Screenings



by William M. Avery

THERE has been an exchange of correspondence between the two gentlemen involved in the wager which this department described several months ago. As holder of stakes in a five-to-one bet hinging upon the possible effect of the withdrawal of government support upon the sale of agricultural limestone, we pointed out that our own administrative expenses were running on merrily, and we 'hinted delicately that we might have to ask the disputants to send us additional funds in order to keep the original sums intact. We also suggested that perhaps some sort of permanent subsidy could be worked out, in view of the fact that there seemed little chance that either of the wagerers could win the bet within the foreseeable future.

Anyhow, one of the bettors (the fellow on the long end) has written the other as follows: "While I am perfectly willing to subsidize the farmers, I will be damned if I'm going to subsidize Bill Avery. From his threats with regard to administrative expenses, I am not at all sure that I shouldn't get back my five dollars, and you your one dollar, which would permit us jointly to purchase a bottle of the same brown fluid that inspired the bet. This might inspire a bet of even more involved detail."

The other fellow wrote back as follows: "I think he (Avery) has taken a very realistic attitude on the cost of handling funds . . . (and) he has hit strangely enough on one of the basic precepts that was in my mind when I made the statement that I thought the farmer subsidy should be cut out because it costs so much money to collect and distribute the money . . . (that) the tax payer pays double for everything the farmer gets."

We're now looking into the legal aspects of the matter to determine whether the first gentleman can be compelled to put up another five bucks every time the second guy kicks in with a dollar. Once that principle is firmly established, this department may be addressed in care of the Roney Plaza, Miami Beach.

His Master's Voice

WE'VE just received a publicity release concerning an electronic marvel called the Message Repeater which is described as "the machine that talks at the sight of a human being". About the size and shape of a Brownie camera, this ultimate expression of man's inhumanity to man automatically repeats

any desired message in a clear, clarion voice whenever a human being enters its area of influence.

Our source of information extolls the possibilities of the Message Repeater as a safety device, pointing out that it could be installed at hazardous points throughout industrial plants to warn employees of the dangers which threaten them. All we hope is that they'll teach the damned thing to clear its throat, or cough, or emit *some* introductory noise so that workers won't be so startled they'll fling themselves into the very hazards 'tis hoped they will avoid.

First Principles

AT a special conference on supervision held in Chicago the other day the American Management Association, after careful deliberation, reached the conclusion that the pay envelope is, "after all", a potent force in stimulating employee morale. According to one spokesman, "The fact that money plays an important role and cannot be underestimated is true, (and) this applies not only at the supervisory level, but at all levels of work and income."

Bet the boys staggered home from *that* meeting with a glowing sense of accomplishment!

Devine Help

OUR "More Information Please" department has passed over to us a pamphlet entitled "Devine Impregnators" put out by the J. P. Devine Manufacturing Co. All things considered, we believe the best course we can pursue is to relay this news to our readers without comment.

Lesson in Logic

ANYBODY who thinks for a minute that public servants in the United States have a monopoly on queer behavior should spare a glance for our neighbors to the north. From Yorkton, Saskatchewan, comes a story about the brief joy experienced by rural citizens who

watched a road crew put down a mile of new gravel on the highway in front of their farms. A few days later the same operators returned, removed the new gravel, and departed after delivering the Olympian explanation that they had been drying the material in preparation for its use on another road.

V-C® Experience Means Better Bags for You

Experienced inspectors watch every phase of V-C's bag-making operation. Shown above is inspection of pasted bags. Photo at right shows battery of sewing machines, and inspection of completed sewn bags on conveyor belt.

Experienced operators carefully apply sleeves in the manufacture of sewn-valve bags. Great care is necessary in this operation. An improperly inserted or aligned sleeve can cause sifting after the bag is filled.

DEPEND ON V-C's more than 50 years of bag-making experience to help solve your packaging problems. Long experience, manufacturing skill and top-grade materials, add up to better-built V-C Multiwall Bags that provide maximum protection for your product. V-C Multiwall Bags are designed to your needs, made two- to six-ply, and printed in one to four colors. Write for full information, or discuss your requirements with a V-C representative.

Virginia-Carolina Chemical Corporation

BAG DIVISION: 9th and Perry Streets, Richmond 5, Virginia

DISTRICT SALES OFFICES: Atlanta, Ga. • Wilmington, N. C. • New York, N. Y. • E. St. Louis, Ill. • Cincinnati, Ohio

Blaine S. Smith Retires As Universal Atlas President—Succeeded by C. S. Baker

Blaine S. Smith, who was formerly president of Universal Atlas Cement Company, a subsidiary of United States Steel Corporation, retired from this post on December 31, 1953. He will be succeeded by Charles B. Baker, who was the former executive vice-president. Mr. Smith, who has been associated with Universal Atlas for more than 37 years, will continue with the company in a consulting capacity.

Mr. Baker joined Universal Atlas in 1942, becoming secretary the following year and general attorney in 1945. He was elected a director in 1944 and in 1949 was appointed assistant to the president. He was elected vice-president and general attorney in 1951 and executive vice-president in July, 1953.

Born in Kenilworth, Ill., Mr. Baker attended Dartmouth College and was graduated from the University of Chicago Law School in 1938. He was admitted to law practice in Illinois in 1938, and served as division counsel for U. S. Steel in Chicago for four years. In 1949 he was admitted to the New York bar. Mr. Baker is a member of the Association of the Bar of the City of New York and the Chicago Bar Association.

Blaine S. Smith

Mr. Smith was educated in the public schools of Chicago. He began his business career with the Chicago & North Western Railway in Chicago, and later was a claim adjuster for the Atchison Topeka & Santa Fe Railway in Los Angeles before returning to the Chicago & North Western in Chicago as contracting freight agent.

From 1908 to 1915, Mr. Smith progressed through various positions with the Universal Portland Cement Company in Chicago and for 13 years served the company as general sales manager, director, and vice-president. From 1928 to 1936 he was president of the Penn-Dixie Cement Corporation in New York, returning to Universal Atlas as president and director in 1936.

A director of the Portland Cement Association since 1925, Mr. Smith was the association's president and board chairman in 1925 and 1926. He is a past director and treasurer of the National Association of Manufacturers and is also affiliated with the United States Chamber of Commerce, the American Society for Testing Materials, the American Iron and Steel Institute, and the American Road Builders Association.

● This hand-crafted chrome-plated 1/8-in. scale model of a Universal 2036/54P primary crushing plant, built by W. J. Burian, a vice-president of the Universal Engineering Corporation, will be a feature of the Pettibone-Universal display at the National Sand and Gravel Association and the National Crushed Stone Association convention shows. The model is valued at $30,000.

Charles B. Baker

LORIN O. ROBINSON, retired supervisor of the sack and claim division of Universal Atlas Cement Company, with which he was associated for 47 years, died at his home in Lakeland, Fla., on December 28.

Mr. Robinson began his career with Universal Atlas as a cement tester at Chicago in 1906. He retired in 1951.

Arch Carswell Appointed V.-Pres., Sales, by St. Regis

St. Regis Paper Company officials have announced the appointment of Arch Carswell to the newly-created position of vice-president in charge of sales of all products of the company, effective December 1. Mr. Carswell has been vice-president in charge of sales of the Multiwall Packaging Division.

Working with Mr. Carswell are E. G. Murray, vice-president in charge of sales of the Printing, Publication and Converting Paper Division; Reginald L. Vayo, vice-president in charge of sales of the Kraft Division; and C. Russell Mahaney, vice-president and general manager of the Panelyte Division.

Mr. Carswell, who joined St. Regis in 1928, was named a vice-president in 1949 and was elected to the board of directors in October, 1952.

Arch Carswell

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE January, 1924, issue of PIT AND QUARRY reflected the activity going on in the cement industry at that time. Several new plants were under construction, many were carrying on expansion programs, and many new plants and expansion programs were proposed. The Giant Portland Cement Company, Egypt, Pa., had just put in operation what was then the largest rotary kiln in the Lehigh Valley. The Vulcanite Portland Cement Company, Vulcanite, N. J., was expanding its 1,900,000-bbl.-per-year plant without interference to production. The Petoskey Portland Cement Company, Petoskey, Mich., had under way the expansion of its plant from 2,500 up to 4,500 bbl. per day. Equipment being installed included new kilns and a power plant. The Yosemite Portland Cement Company, Merced, Calif., had begun the construction of its $500,000 new plant. It was reported that land had been purchased for the proposed new plant of the Guadalupe Portland Cement Company at San Jose, Calif., which was to cost $1,000,000. Interests connected with the Old Mission Portland Cement Company of San Francisco were reported to have organized the San Joaquin Portland Cement Company. A new $600,000 plant with a capacity of 3,500 bbl. daily was to be built near Three Rivers, Calif.

There was also much activity in other industries. The Western Ohio Gravel Company at Greenville, Ohio, was formed to take over several gravel operations in western Ohio. All of the stock in this concern was owned by the Greenville Gravel Company and the Ohio Gravel Ballast Company. Its officers were as follows: F. D. Coppock, president; Harry Donnelly, vice-president; and C. E. Patty, secretary-treasurer. The incorporators also included Guy C. Baker, Edward Donnelly, and Earl Zimmerman.

The Universal Gypsum Company of Chicago announced that it would begin construction of a $250,000 new plant near Rotan, Texas. A capacity of 200 tons daily was planned.

Several outstanding plant operations were described in this issue. One was the York, Pa., lime plant of the Palmer Lime & Cement Company, which also operated a plant at Oranda, Va. This plant had been in operation since 1907, when the original ten modified coal-fired Keystone kilns were installed. Two new special kilns were said to be the largest shaft kilns then in use, with a capacity of from 75 to 100 tons daily. They were fired by four R. D. Wood gas producers. A new hydrating department had just been completed.

Another detailed illustrated article described the new crushed stone plant of the American Crushed Rock Company at White Sulphur, Ohio. This had a capacity of 450 t.p.h. It was built alongside the company's 10-year-old lime plant, which had 10 shaft kilns and a capacity of 60 tons of lime daily.

Two new sand and gravel plants were also described. One was built by the Long-Bell Lumber Company, which had a mill at Longview, Wash., to supply aggregates for that model city. The other was built by the Continental Clay Company at Columbus, Ohio.

Prominent in the news was the passing on December 26, 1923, of A. Acton Hall, president of the Ohio Marble Company, Piqua, Ohio. He was not only a leading producer, but was also active in the affairs of the National Crushed Stone Association.

Then, as now, it was the custom of PIT AND QUARRY to print an advertisement of the coming major conventions. This one told of the coming conventions of the National Crushed Stone Association and the National Sand and Gravel Association in St. Louis. The former was to be held at the Statler Hotel, on January 21 to 23, 1924, and the latter at the Chase Hotel on January 22 and 23. The fifth annual meeting of the Wisconsin Mineral Aggregate Association at Milwaukee on December 20, 1923, was described, as was also the meeting on December 17 and 18 of the Missouri Valley Association of Sand and Gravel Producers at Kansas City, Mo.

$575,000,000 Apportioned For Federal Aid Highways

Apportionment of the $575,000,000 authorized as federal aid to the states for highways in the fiscal year beginning July 1, 1954, has been announced by Sinclair Weeks, Secretary of Commerce. The funds were authorized by the Federal Aid Highway Act approved on June 25, 1952.

The apportionment of $575,000,000 made after setting aside an amount for administration and research, as authorized by law, is given below.

The Act provides $247,500,000 for projects on the Federal Aid primary highway system; $165,000,000 for projects on the Federal Aid secondary system; $137,500,000 for projects on the Federal Aid primary highway system in urban areas; and $25,000,000 for projects on the National System of Interstate Highways. This is the second apportionment of funds provided specifically for the Interstate System.

The funds become available to the states as of January 1, 1954, and will be expended under supervision of the De-

(*continued on page* 179)

State	Federal Aid Primary Highway System ($247,500,000)	Secondary or Feeder Roads ($165,000,000)	Urban Highways ($137,500,000)	Interstate System ($25,000,000)	Total
Alabama	$ 5,254,353	$ 4,071,630	$ 1,767,190	$ 536,065	$11,629,238
Arizona	3,682,659	2,508,001	524,664	374,943	7,090,267
Arkansas	4,099,014	3,280,781	754,576	417,845	8,552,216
California	11,302,419	5,819,399	11,990,492	1,156,953	30,269,263
Colorado	4,430,632	2,959,462	1,121,056	451,275	8,962,425
Connecticut	1,596,556	894,375	2,612,362	163,779	5,177,072
Delaware	1,206,563	894,375	276,636	121,875	2,499,449
Florida	4,000,064	2,614,900	2,418,720	408,607	9,442,291
Georgia	6,093,832	4,654,049	1,965,808	621,611	13,335,300
Idaho	3,035,086	2,134,840	259,599	308,923	5,738,448
Illinois	9,485,889	5,165,722	9,433,309	970,391	25,055,311
Indiana	5,844,963	4,028,914	3,227,030	596,664	13,697,571
Iowa	5,946,365	4,351,647	1,601,372	605,903	12,505,287
Kansas	5,975,744	4,183,753	1,267,798	608,493	12,035,698
Kentucky	4,538,481	3,767,905	1,400,780	463,271	10,170,437
Louisiana	3,836,826	2,777,082	1,977,289	391,908	8,983,105
Maine	2,065,955	1,478,426	563,746	210,595	4,318,722
Maryland	2,164,618	1,323,108	2,289,281	221,739	5,998,746
Massachusetts	3,127,509	1,161,437	5,614,329	321,494	10,224,769
Michigan	7,641,646	4,662,919	6,277,985	781,229	19,363,779
Minnesota	6,385,910	4,508,055	2,196,488	650,982	13,741,435
Mississippi	4,401,911	3,666,740	746,808	448,780	9,264,239
Missouri	7,177,229	4,856,089	3,321,925	732,034	16,087,259
Montana	4,945,242	3,401,828	317,626	503,085	9,167,781
Nebraska	4,831,122	3,404,259	791,122	488,697	9,485,240
Nevada	3,179,310	2,124,823	102,729	323,336	5,730,198
New Hampshire	1,206,563	894,375	399,467	121,875	2,532,280
New Jersey	3,183,503	1,071,310	5,904,745	327,310	10,486,958
New Mexico	4,002,794	2,749,864	442,682	407,405	7,602,745
New York	11,573,650	4,637,841	18,029,589	1,187,586	35,428,657
North Carolina	6,101,355	5,211,948	1,733,316	622,886	13,669,505
North Dakota	3,572,139	2,593,772	228,084	363,355	6,757,350
Ohio	8,586,082	5,222,980	7,805,716	878,337	22,493,115
Oklahoma	5,269,114	3,772,951	1,473,687	536,936	11,052,688
Oregon	4,249,393	2,941,860	1,081,596	428,962	8,661,811
Pennsylvania	9,663,989	5,751,129	10,211,618	989,979	26,616,706
Rhode Island	1,206,563	894,375	964,266	121,875	3,097,079
South Carolina	3,315,477	2,745,191	927,881	338,411	7,326,969
South Dakota	3,845,626	2,746,570	261,991	391,167	7,245,354
Tennessee	5,335,882	4,158,793	1,950,550	544,484	11,989,709
Texas	15,972,097	10,694,852	6,462,029	1,628,769	34,757,747
Utah	2,830,795	1,872,691	571,559	288,296	5,563,341
Vermont	1,206,563	894,375	210,027	121,875	2,342,840
Virginia	4,676,730	3,634,841	2,103,426	477,631	10,892,628
Washington	4,070,327	2,719,183	2,035,293	415,444	9,240,247
West Virginia	2,685,059	2,337,564	877,871	274,317	6,174,811
Wisconsin	5,816,900	4,058,553	2,641,382	593,492	13,110,327
Wyoming	3,070,586	2,081,954	146,664	312,346	5,610,550
Hawaii	1,206,563	894,375	453,586		2,464,524
District of Columbia	1,206,563	894,375	1,165,310	121,875	3,298,123
Puerto Rico	1,278,217	1,335,768	1,159,454		3,773,439

DEWEY

Further Expands Davenport Plant

Recent expansion and modernization program includes addition of two 11- by 375-ft. kilns, over-track cement silos, and second primary crusher on quarry floor. One of many features is constant charging method of introducing grinding media to raw and finish mills.

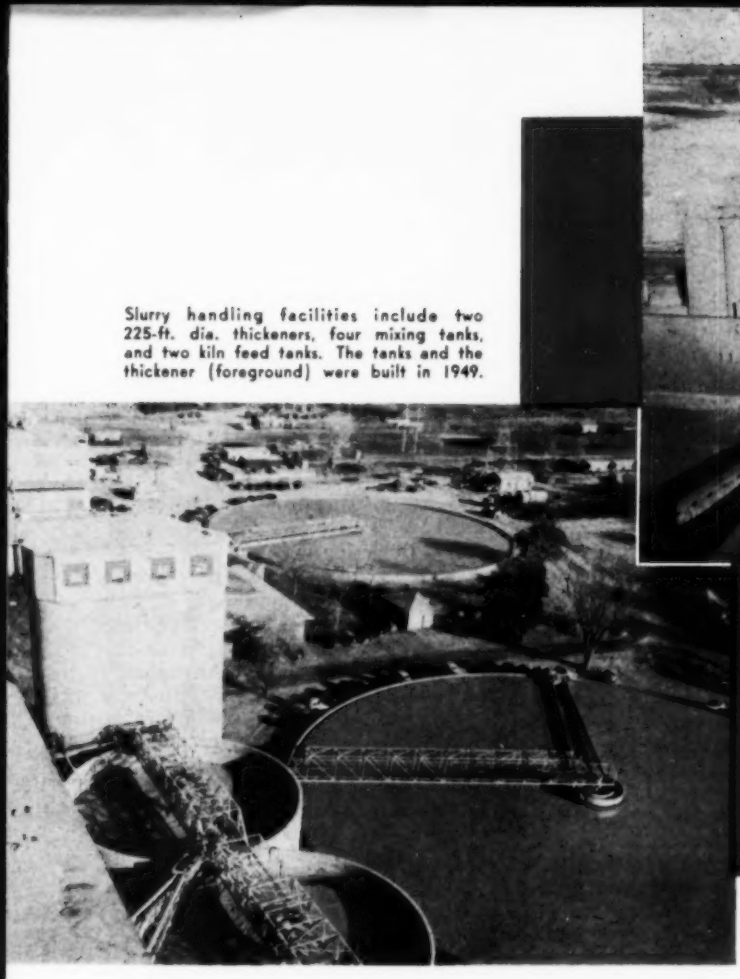
By KENNETH A. GUTSCHICK

another ON THE SPOT report

DURING the last five years the Dewey Portland Cement Company has undertaken two major expansion and modernization programs at its Linwood wet-process plant, which is located on the Mississippi River about ten miles west of Davenport, Iowa. A total expenditure of about $4,000,000 was involved in the projects. Of the large number of changes made since 1949 the most important has been the addition of three 11- by 375-ft. rotary kilns and related equipment coupled with the shutdown of the company's three older kilns (11- by 175-ft. units). These smaller kilns were equipped with slurry filters and were operated in conjunction with waste heat boilers. As a result of the changeover, the rated capacity of the plant has been increased 60 percent (from 4,500 to 7,200 bbl. per day). Currently the plant's annual production is 2,700,000 bbl.

The first major expansion program took place in 1949, when the first of the three 375 ft. kilns was erected; it was placed in operation in September of that year. The second expansion project, installation of the second and third kilns, was carried out

A general view of the Dewey Portland Cement Company's Linwood wet-process plant (near Davenport, Iowa). Recent additions to the plant shown here include a 755-ft. conveyor gallery serving the new primary crusher (right), the six-stall garage on the quarry floor, and eight cement storage silos under construction (left).



Slurry handling facilities include two 225-ft. dia. thickeners, four mixing tanks, and two kiln feed tanks. The tanks and the thickener (foreground) were built in 1949.

A view from the 250-ft. stack, showing the roof of the new kiln building (foreground), raw and finish materials covered storage, bulk cement storage facilities, and the quarry. Eight new silos loom above the older silos.

three years later. These kilns began operating in May and June of 1953. At that time the three short kilns were taken out of service. It is to be noted that the addition of the first 375-ft. kiln accounted for the bulk of the plant's recent increase in capacity, since at this time 2,400 bbl. was added to the previous 4,500-bbl. daily capacity. When the last two kilns were placed in operation and the three short kilns were shut down, there was a further net gain of 300 bbl. daily.

Due to the substantial increase in burning capacity, various changes were necessitated in the entire plant operation. First of all, during the 1949 building program, finish grinding capacity was stepped up to 9,000 bbl. daily through the addition of two 7- by 26-ft. Compeb mills. Slurry handling facilities were likewise expanded at that time by means of new storage and blending tanks and a second 225-ft. dia. thickener. Because the waste heat boilers were unable to meet the increased power requirements of the new installations, the company had to purchase supplementary power. This necessitated the erection of a 4,500 kv.-a. transformer station, which supplied about 40 percent of the entire plant requirements. Cement storage capacity and handling facilities were also increased by the addition of ten new silos and a new packhouse.

The 1952-1953 building program brought forth other important changes. Due to the shutdown of the short kilns and consequently the waste heat boilers, the company changed over to 100 percent purchased electric power. For this purpose a new 10,000 kv.-a. transformer station and auxiliary units were constructed. A battery of eight new-type overtrack concrete cement storage silos were added, which will be in operation the early part of 1954. New dust collectors were added to the clinker cooler circuits and new constant weight feeders to the raw mills. Barge loading facilities were improved through the extending of the concrete dock and the installation of a bulk cement pipe line. Finally, the entire plant operation was streamlined with the installation of two-way radio communications.

In the quarrying operation three tractor-trailer haulage units were purchased for handling overburden removal. Primary drilling was stepped up with the addition of a Joy rotary drill. New secondary cone crushers and hammermills were also added. At present a second primary crusher is being installed on the quarry floor to handle stone from the upper of the two quarry levels. An inclined conveyor belt will deliver the material to the secondary crusher building.

Dewey's expansion program has also been marked by the addition of

These new over-track silos under construction will increase the plant's storage capacity to over 1,000,000 bbl. Covered hopper cars will load directly underneath the silos, thereby facilitating loading considerably.

The key operating personnel of Dewey's Davenport plant include (left to right): E. S. Ernst, plant manager; Harold Egger, plant engineer; N. D. Armentrout, quarry and stone plant superintendent; C. Babcock, electrical foreman; G. N. Roop, master mechanic; J. J. Parsons, plant chemist; Fred B. Hunt, assistant vice-president in charge of operations; Carl Rauch, safety director; and George R. Cross, mill foreman.

several auxiliary buildings, including a modern teletype-equipped shipping office, a six-stall truck garage located on the quarry floor, a quarry office, a switch gear house, an oil house, and an electrical warehouse and shop. These buildings were constructed of precast concrete panels and erected by the tilt-up method. In the construction of these buildings, the windows and doors were installed before the tilt-up concrete walls were poured; in the case of the insulated quarry office, furring strips for plastering were also installed before the pour.

New Plant Features Before proceeding to details of the plant operation, it will suffice here to enumerate some of the more important features of Dewey's enlarged and improved Davenport plant. These include the following:

1. Complete instrumentation of the burning operation
2. Maintaining a uniform kiln bed load
3. Constant charging method of introducing grinding media to the raw and finish mills
4. Large bulk cement storage capacity (over 1,000,000 bbl.)
5. Introduction of overtrack car loading silos poured by slip-form method
6. Installation of water-cooled burner floor and railings
7. Excellent safety, good housekeeping, and fire protection practices.

Operating procedures outlined in 2 and 3 are believed to be unique to the Davenport plant. The installation of overtrack silos is the first of its kind in the cement industry. By permitting the direct loading of covered hoppers, this new type of silo will effect rapid and efficient loading. The use of a water-cooled burner floor and railings is among the first in the industry. An unusually large cement storage capacity is likewise worthy of mention, since it represents about 40 percent of the plant's total annual production. Each of these features will be described in greater detail.

Quarrying In the quarrying operation, which had already been improved during the last few years by the addition of new equipment, there will be further improvements when the second primary crusher (a 42-in. Allis-Chalmers gyratory unit) goes into service in the early part of this year. Under the old operation stone from the top bench was cast by shovel to the quarry floor, to be truck-loaded by other shovels. This double handling will be eliminated under the new op-

Eight-inch primary blast holes are drilled with this electric rotary drill and two well drills (not shown here). The rotary drill averages about 34 f.p.h. (based on actual rotating time).

A 2½-cu. yd. dragline loading clay overburden into a recently-acquired 25-cu. yd. tractor-trailer combination.

eration, since top level stone will be trucked directly to the new primary crusher. Material will then be delivered to the secondary crushing building *via* a Pioneer 36-in. by 755-ft. inclined conveyor belt, fitted with U. S. Rubber Company belting. The new belt will be fed by a 5- by 14-ft. Oro manganese feeder. To reduce belt wear the feed to the belt will discharge over a bar grizzly, which will allow a cushion of fines to spread over the belt before the coarse stone reaches it.

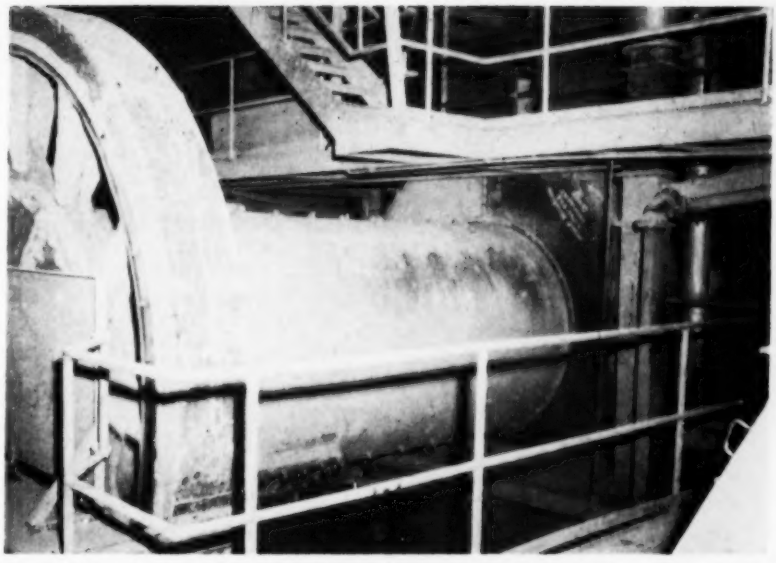
The two benches being worked at the quarry vary considerably in chemical and physical composition. The upper zone, designated the Cedar Valley formation, is a limestone containing minor amounts of clay; it varies from 32 to 85 ft. in thickness. In contrast, the lower bench, called the Upper and Lower Davenport formation, is a high-calcium limestone (95 percent $CaCO_3$), varying from 45 to 50 ft. in thickness. The stone of the lower level is suitable for both cement making and aggregates, while that of the upper zone is used primarily as cement rock.

Clay used in the raw mix is obtained from the overburden at the quarry site. A 2½-cu. yd. P & H 955 dragline and a 1½-cu. yd. 605 Koehring shovel are used for stripping. Two of the three recently acquired tractor-trailers used in overburden removal are combination DW-10 Caterpillar tractors and Athey wagons. The third is a DW-20 Caterpillar tractor with an Easton 25-cu. yd. side-dump trailer.

Primary drilling is handled by a Joy 58BH Heavyweight Champion electric rotary drill, which was purchased early in 1952, and two older diesel-powered Bucyrus-Erie 29T well drills. Eight-inch- diameter holes are drilled. Careful records kept on drilling performance indicate that the drilling rate of Joy machine averages about 34 f.p.h., based on actual drill rotation time; however, on an overall basis (considering moving time, setup time, repairs, etc.) the drilling rate is 24.6 f.p.h. Both Trojan and Hercules (7-in.) explosives are used in primary blasting. Jackhammers are used for secondary breakage; and a truck-mounted Joy compressor supplies the air.

Quarry loading is handled by two Marion 4101 2½-cu. yd. electric shovels and one 4-cu. yd. 1400 P & H electric shovel. The quarry is equipped with a G. E. grounding system for added safety. Four International trucks fitted with Easton side-dump trailers are used in quarry haulage. Loads average 17 tons.

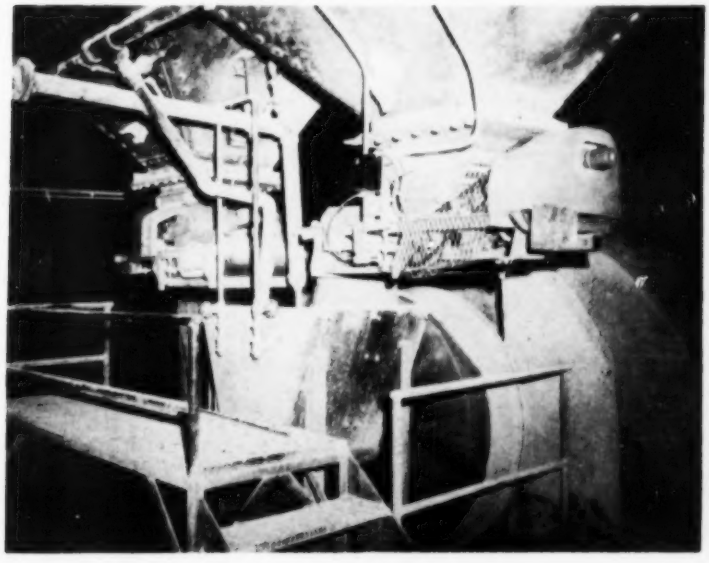
Flexibility in the secondary crushing plant has been effected by the installation of a pair of Symons 4½-ft. standard cone crushers and a second Gruendler 50- by 52-in. hammermill. Stone from these four reduction units is transported by a long 36-in. inclined belt conveyor to the screening plant. There a variety

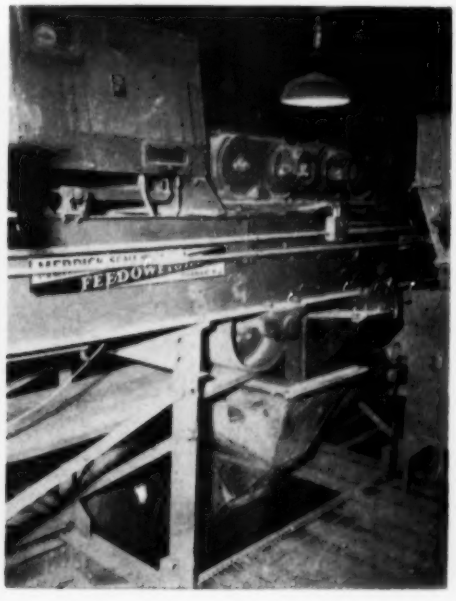


One of the six 7- by 26-ft. finish mills. The Davenport plant features a constant-charging method of introducing grinding media to the raw and finish mills, which is based on mill-hours of operation.

Clinker and gypsum are accurately proportioned and fed to the finish mills by automatic weighing feeders.

Newly-installed constant-weight feeders serving one of the raw mills.



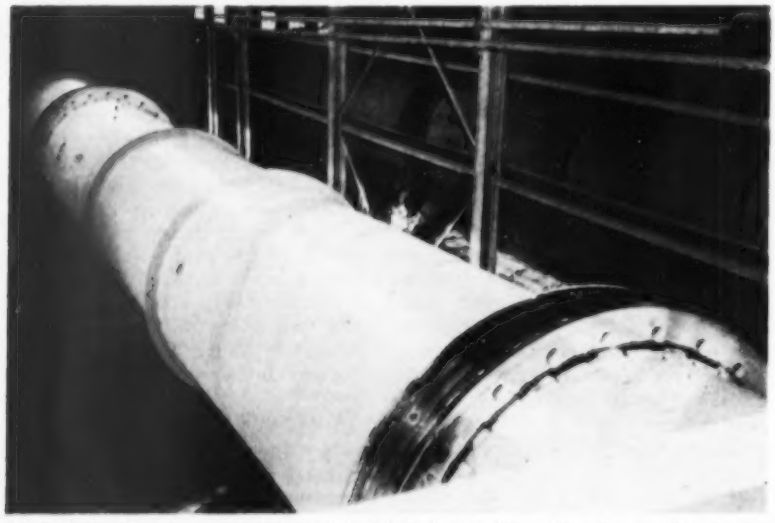


of commercial stone sizes, as well as the minus ½ in. raw feed to the cement plant, are made. Fine reduction is accomplished with two hammer mills (including a 5XC center feed Gruendler unit and a 5 ga Williams mill) and a No. 7 Newhouse gyratory crusher. The capacity of the screening plant is about 400 t.p.h.

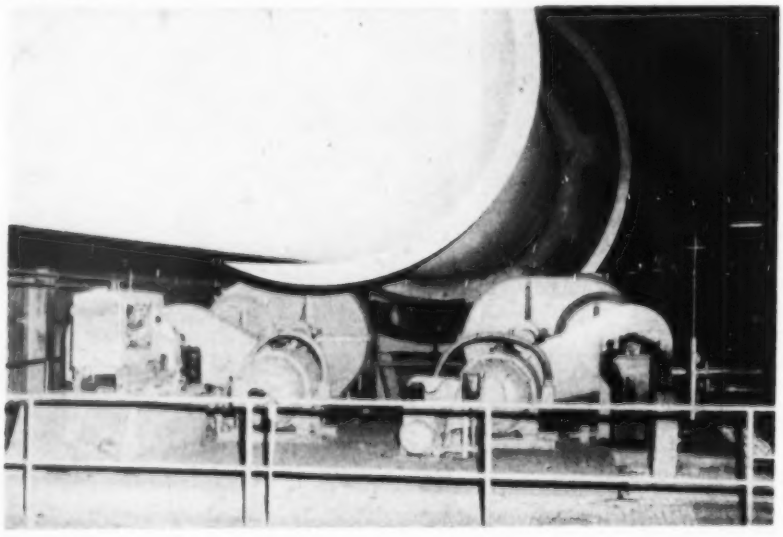
Raw and Finish Grinding Raw grinding is handled by two Allis-Chalmers 7- by 26-ft. Compeb mills which have been converted to tube mills, while six A.-C. 7- by 26-ft. Compeb mills (five two-compartment mills and one converted tube mill) are used for finish grinding. The mills are driven by A.-C. 500-hp. synchronous motors through Cutler-Hammer magnetic clutches. Under the recent expansion programs, the raw mill output has been increased by operating the two mills around the clock. Feed to the raw mills is through pairs of recently-installed Hardinge Type C constant-weight feeders, which replaced the older table feeders. Each raw mill is operated in closed circuit with a Dorr bowl-rake classifier.

For proportioning and feeding cement clinker and gypsum to the finish mills, pairs of 3- by 10-ft. Merrick Type WS Feedoweights are used. Each mill (with the exception of No. 3 and No. 4) is close-circuited with a 16-ft. Sturtevant mechanical air separator. A fifth Sturtevant separator serves No. 3 and No. 4. Oversize from the separators is returned for regrinding to the second compartment of the mills. Also operating in each mill grinding circuit is a 15-ft. Norblo bag-type dust collector.

A view in the new kiln building shows the 11- by 375-ft. rotary kilns; one went into operation in 1949 and the other two in 1953.



Each kiln is driven by a variable-speed dual helical gear drive. Note the gasoline standby engine (left).



One of the outstanding features of Dewey's Davenport operation is the use of a constant charging method for introducing grinding media to the raw and finish mills. Under this arrangement the initial ball charge of about 96,000 lb. per mill is replenished once a week while the mills are in operation. The primary grinding balls are added through the feed screw or drum feeder of the mills, while that to the second compartment is added through a pickup scoop.

The rate of feeding additional grinding media to the mills has been worked by experimentation; it is based on the mill-hours of operation. The method used is as follows:

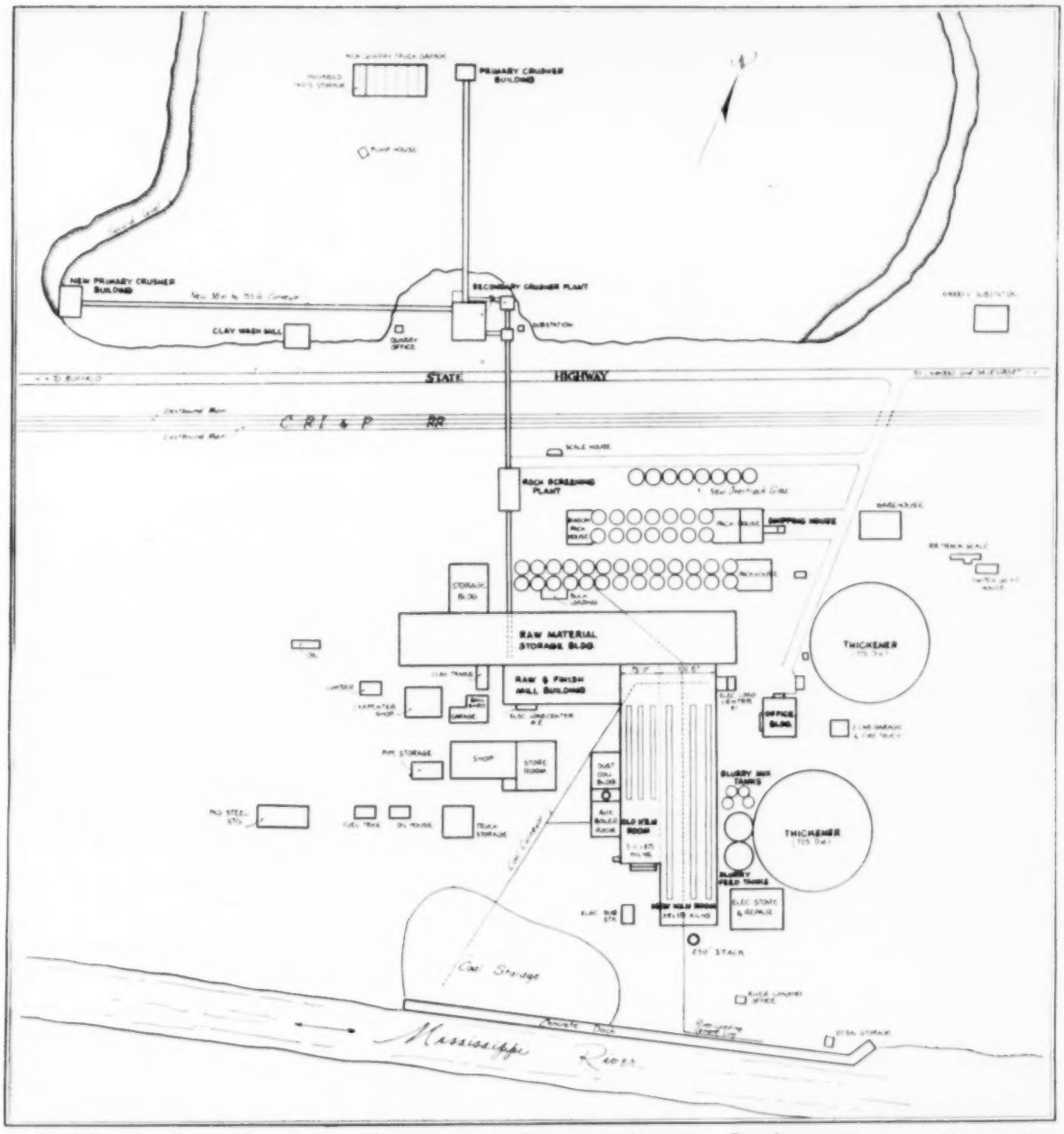
Raw mills: Three-in. round and 1¼-in. round chrome molybdenum balls are used in the raw mills. They are replenished at the rate of 3 lb. per mill-hour of operation of 3-in. balls and 11 lb. per hour of operation of 1¼-in. balls.

Finish mills: The initial charge in the finish mills (with the exception of the single tube mill) consists of the following: first compartment—23,000 lb. of a mixture of 2-, 2½-, 3-, and 3½-in. balls; second compartment—73,000 lb. of 1¼-in., ⅞-in., or ¾-in balls. Three types of grinding media are being used, including wrought Concavex, Ni-hard, and chrome molybdenum.

The rate of charge for the finish mills is as follows: 2½ lb. per mill-hour of operation of 3-in. balls, 9 lb. per hour of operation of ⅞-in. chrome molybdenum balls, and 5 lb. per hour of operation of 1¼-in. wrought Concavex balls. The tube mill is replenished at the rate of 3 lb. per hour of operation of ¾-in. wrought Concavex balls. The one Compeb mill operated in circuit with the tube mill has a slightly greater charging rate of 3-in. balls because it handles a higher tonnage of clinker than the other mills; the rate of charge is 3½ lb. per hour of operation.

By means of this constant charging method, the ball mills are operated at high efficiency because the ball sizes remain fairly constant. In addition the mills do not have to be shut down when grinding media are added.

Slurry Handling Changes in slurry handling during the 1949 building program included the installation of a second Dorr 225-ft. diameter thickener and two kiln feed slurry tanks of 8,000-bbl. capacity each. These additions not only accommodated the increased production, but also permitted great-



Plan view of the Davenport plant of Dewey Portland Cement Co., showing the new facilities added in 1953.

er flexibility in the mixing and blending operations. Flow into each thickener from the raw mills is by gravity, while the underflow from each thickener is pumped into the battery of four 20-ft. diameter by 42-ft. high mixing tanks by two (one standby) Wilfley 4-in. pumps, each driven by a 100-hp. motor. The general practice is to hold the calcium carbonate content of the material in one thickener five percent below the kiln feed percentage while material in the other thickener is held at five percent above.

Discharge from the mixing tanks is by gravity to either of the two new kiln feed tanks. The latter tanks also serve for blending and mixing the slurry, which is accomplished with Dorr air-rake agitation devices. The general practice is to use slurry from a kiln feed tank for one day's production, while preparing the second tank for the following day's production. Transfer of slurry to the ferris wheel feeders on the kilns is effected by four 4-in. Wilfley pumps, one serving each kiln and one standby. The pumps are driven by 40-hp. Fairbanks Morse motors. Slurry is fed to the kilns at 34 to 37 percent moisture.

Burning The rotary kiln installed in 1949 and the two added in 1953 are identical 11- by 375-ft. all-welded units supplied by the Allis-Chalmers Mfg. Co. To house these kilns, an addition to the old kiln building was erected, which was constructed of steel framework, corrugated Transite siding, and a precast concrete slab roof. The new kilns were installed parallel to three idled kilns; all six units share a common burner floor. One interesting feature of the new addition was the installation of a water-cooled burner floor in which a maze of water pipes are embedded in the concrete slab. This installation, along with water-

cooled railings, improves working conditions considerably by substantially reducing the burner floor temperature. During the winter operation the heated water issuing from the burner floor is piped to the thickeners to help prevent them from freezing.

The three new kilns have ¾-in. shells and are mounted on a ⅜-in. pitch. Each kiln has six floating-type tires of box design, which ride on two 48- by 24-in. forged steel rollers having water-cooled bearings. The kilns are also equipped with single thrust rollers located near the kiln drive. The discharge end of each kiln is air-cooled; segmented alloy steel is used in the nose ring. The kiln hoods are tight-fitting in order to eliminate air leakage.

Each kiln is driven by a variable-speed dual helical gear drive, consisting of two 60/75 hp., 230 v., d.c., variable-speed, 300/1200 r.p.m. Allis-Chalmers motors, each driving separate Falk speed reducers through Texrope belts. The reducers, in turn, drive the helical pinion gears which engage the main kiln ring helical gear. A steady continuous driving force is maintained by keeping the twin motors in balance by means of rheostats. Each motor normally operates at 125 amperes. A 200-kw. d.c. motor generator, driven by an induction motor, supplies current for the twin d.-c. motors. An A.-C. four-cylinder gasoline engine is used as a standby drive in the event of power failure. One important feature in the drive mechanism is the A.-C. synchro-tie, which synchronizes the speed of the kiln with the ferris wheel slurry feeder. This unit is driven by a 9.4-kw. generator energized from the kiln drive. The kilns are generally driven at 80 r.p.h.

A view of one of the kiln hoods. The 16-in. burner pipe is fitted with a sliding water jacket and a blind, which permit the aspiration of additional primary air.

Each kiln is equipped with an 80-ft. chain section at the feed end. Some 58,000 lb. of mostly ⅝-in., but also ¾- and ⅞-in. oblong link chain hung from spiral lifters, is used. Three chain patterns are used, including 1-3, 2-4, and 4. The patterns differ as follows: the first pattern has half the density of the other two; the first two patterns are made up of short and long chain in the ratio of two long chains to one short chain, while the third pattern contains all long chains. This use of three separate patterns was found to be most effective in preventing the formation of mud rings in the chain section.

The kilns feature a combination of 6-in. refractory brick lining used in the front 290-ft. section and 4½-in. castable lining in the remaining 85 ft. (or chain section). The varying types of lining used are as follows: first 5 ft.—70 percent alumina brick; next 79 ft.—basic brick; next 40 ft.—70 percent alumina brick; next 166 ft.—40 percent alumina brick; next 20 ft.—abrasive-resistant castable refractory; and the remaining 65 ft.—portland cement concrete made with non-calcareous gravel aggregate.

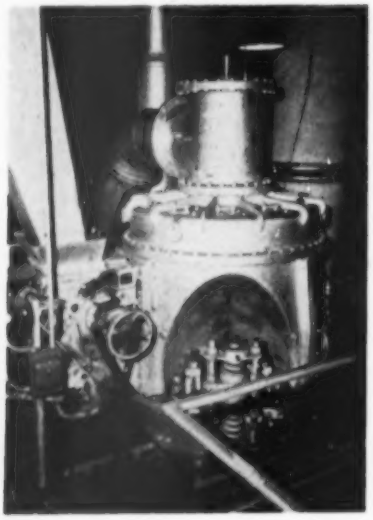
The present application of castables is slightly contrasted to that used in the first 375-ft. kiln when it was installed. At that time abrasive-resistant castables were used throughout the chain section, and the lining was 7½ in. thick for the first 55 ft. of the section and 4½ in. for the remaining 25 ft. The switch to a thinner castable lining and to portland cement concrete has resulted in substantial savings without materially reducing the efficiency of the lining. Castable refractory linings are also used in the clinker coolers, kiln hoods, and kiln housings. The Dewey firm is believed to be the first cement company to use refractory castables in these locations, and is among the first companies to use abrasive-resistant castables in the chain section.

In relining operations front-end tractor-loaders are used to transport the refractory brick into the kiln. These vehicles have access to the kilns *via* ramps leading to the burner floor. In the installation of the first kiln the castable refractory was mixed inside the kiln; castable and portland cement concrete for two most recently installed kilns were mixed on the burner floor and transported into the kilns with motorized wheelbarrows.

Each kiln is supplied artificial draft by a size 8 Sturtevant double-inlet induced-draft fan, which is driven by a 125-hp. motor through Texrope belts. The fan has a capacity of 110,000 c.f.m., and is generally operated at 1 in. w.g. pressure. On the outlet side of the fan is an automatically-operated louver damper which maintains a constant draft in the kiln. Flue gases from the older kiln are discharged through a 40-ft. insulated steel stack, while a new 250-ft. concrete stack serves the two newest kilns.

Direct-firing No. 493 Raymond bowl mills, one to a kiln, pulverize the coal used in the burning operation. The coal is brought in by barge from Illinois mines; it is a sub-bituminous type rated at 10,400 B.t.u.'s per lb. Each bowl mill, driven by a 150-hp. induction motor, is charged by a Richardson coal scale, which both regulates and records the rate

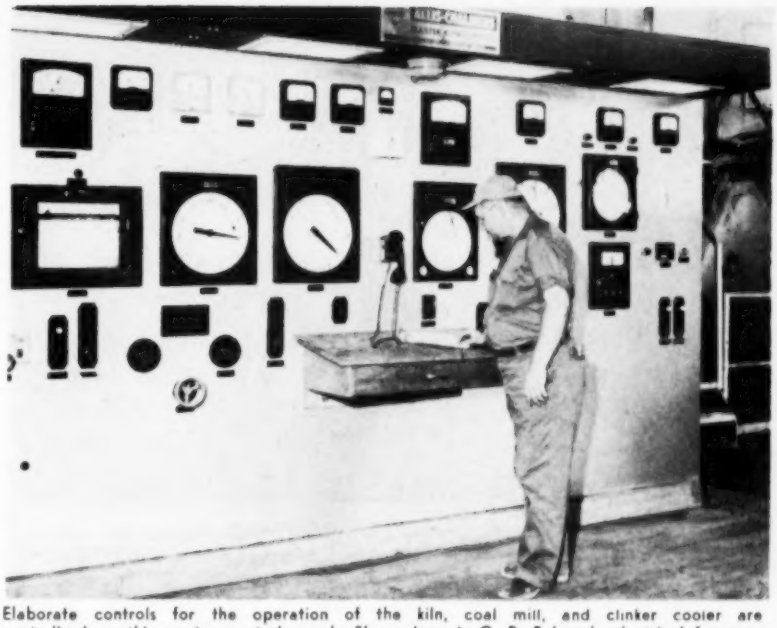
Soft coal used in the burning operation is pulverized in the bowl mill shown on the left. Each pulverizer is charged by a coal scale (right) which both regulates and records the rate of coal fed.



of coal feed. The pulverizers are regulated to produce a fineness of grind of about 75 percent minus 200 mesh. The coal is heated in the bowl mill by primary air drawn from the kiln hood; this air passes through a 7½-ft. cyclone dust collector before entering the mill. By means of an automatically-controlled damper the temperature of the air entering the mill is maintained at about 550 deg. F., and the mixture of coal and air into the kiln hood is about 190 deg. F. Coal is blown by a Raymond exhaust fan into the kiln through a specially-constructed 16-in. water-cooled burner pipe. This pipe is surrounded by a 24-in. O.D. and 20-in. I.D. sliding water jacket; it extends about 10 in. beyond the end of the burner pipe. Extending the water jacket beyond the burner pipe in this manner permits the aspiration of additional air through the opening around the coal pipe and the mixing of this air with the fuel. The end of the water jacket pipe has spiral fins which produce a whirling action to the mixture. This tends to shorten the flame, thereby keeping the maximum heat in the burning zone.

The burner pipe is also equipped with a short blind (see photograph), which is kept partly open. By means of this blind, additional primary air is drawn into the kiln hood as desired by aspiration. It is estimated that primary air comprises 25 to 30 percent of total combustion air.

Instrumentation As mentioned earlier, the Davenport plant features elaborate instrumentation of the burning operation. Each kiln has a separate centralized master control panel on which are mounted various indicating and recording devices used in controlling the operation of the kiln, coal mill, and clinker cooler. Many of the operations are automatic, although optional manual controls are available. The recording instruments were supplied by The Hays Corporation and the Brown Instrument Company.



Elaborate controls for the operation of the kiln, coal mill, and clinker cooler are centralized on this master control panel. Shown here is C. R. Babcock, electrical foreman.

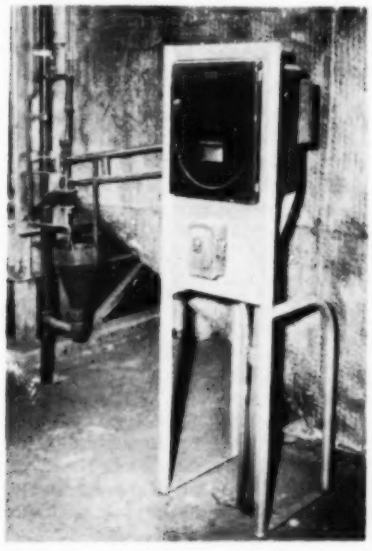
Great emphasis is placed on instrumentation in order to create and maintain ideal burning conditions, not only in the burning zone but throughout the kiln. To do this a number of firing variables must be known and controlled constantly. By so doing, operating efficiency is attained and a highly uniform clinker is produced.

Among the many variables controlled, temperature is of utmost importance. Kiln temperatures, recorded by Brown instruments, are determined at three locations, including the burning zone, the discharge end of the chain section, and the feed end (breeching chamber). Under normal operation the temperatures at each location are 2,600-2,700, 1,000-1,200, and 500 deg. F., respectively. The burning zone temperature is determined by a radiamatic pyrometer, the others by thermocouples. On an experimental basis, the temperature at the drive pier of kiln No. 2 is being determined; this temperature was found to be 1,200-1,500 deg. F.

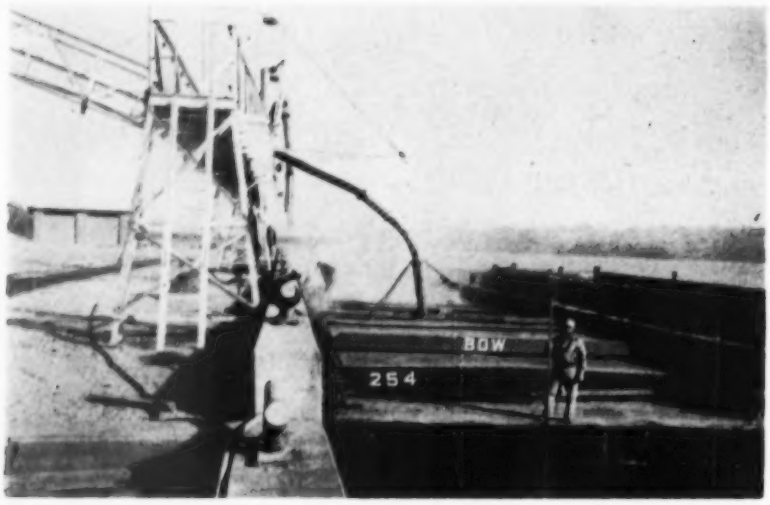
Moisture conditions are also carefully watched. The moisture content of the slurry feed is held at 34-37 percent and that at the discharge end of the chain section at 3-5 percent. The moisture at the latter location is obtained by taking samples of the material through an opening in the shell at this point and drying the samples. Control of this moisture content is effected by observation and regulation of the temperatures found at this location through use of the thermocouple. If the moisture content at the chain section exceeds 5 percent, the coal feed or draft or both is stepped up.

Temperature of air into the coal mill, of primary air into the kiln, and of secondary air from the cooler into the kiln are also recorded on

Each kiln is equipped with an oxygen analyzer, which serves as an indicator of burning efficiency; it is located outside the insulated kiln breeching chamber.



The dust collector shown here is operated in conjunction with one of the clinker coolers.



A barge-loading scene on the Mississippi River, showing the new concrete-dock extension and the new 9-in. bulk cement pipeline.

Brown instruments. These temperatures are controlled by automatically-operated dampers. The secondary air temperature, taken at the hot end of the cooler, is generally held at 900-1,000 deg. F.

A vital instrument indicating burning efficiency is the Hays oxygen analyzer, located at the exit end housing 4 ft. inside the kiln. The optimum O_2 content is 1.5 to 2.5 percent. Hays instruments are also used to record the draft pressure at the kiln feed end and kiln hood. One important feature is that a constant draft is automatically maintained during the burning operation.

Other important instruments mounted on the kiln control panel include a Brown kiln speed indicator; a Brown cooler grate speed indicator and undergrate pressure indicator (speed averaging 275 strokes per minute); a Shallcross cooler speed controller; ammeters for the kiln, cooler, coal mill, cooler fan, exhaust fan, and ferris wheel feeder; kiln and slurry feeder revolution counters; and others.

One outstanding feature in the burning operation is the maintaining of a uniform bed load in the kiln. This is accomplished under present conditions by adjusting the ferris wheel slurry feeder to produce as close as possible to 1.46 bbl. of clinker per kiln revolution. The optimum rate of feed is determined on the basis of the moisture content of the slurry. If the H_2O content is high, the feeder speed is increased proportionately. If low, the feeder is slowed down. Maintaining a uniform bed load results in more uniform clinker production, as well as longer refractory life.

Coolers Each kiln is served by an Allis-Chalmers 4½- by 70-ft. air-quenching reciprocating-grate type clinker cooler. Air is blown through the grates and the clinker bed at a rate of 60,000 c.f.m. by a constant speed fan, which is driven by an A.-C. 75-hp. motor. The flow of secondary air from the cooler into the kiln hood is automatically controlled by a louver-type damper. In the operation of the cooler, the thickness of clinker bed is controlled by varying the cooler speed by a manually-controlled rheostat. Clinker discharged from the coolers is transferred directly to the covered storage area. Formerly clinker production was determined by an automatic weighing device installed at the discharge end of the cooler. Now slurry consumption is used as an indicator of clinker production.

Formerly the coolers exhausted directly to atmosphere through a steel stack, thereby causing a dusty condition. The problem has been alleviated recently by the addition of a Western Precipitation Multiclone dust collector to each cooler circuit. Cooler air is drawn off to each collector by a draft fan of 60,000 c.f.m. capacity, which is driven by a 100-hp. motor. The trapped dust is then discharged to the clinker storage area.

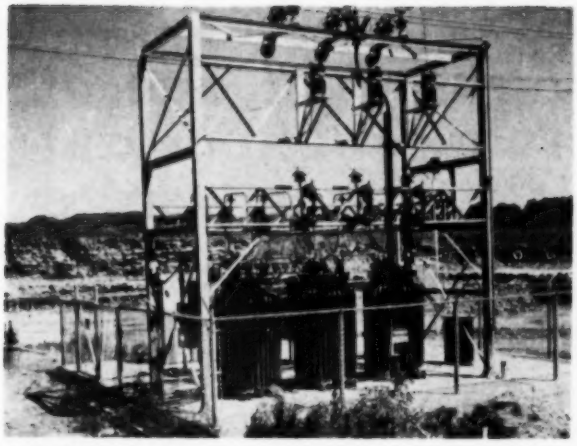
Bulk Cement Storage and Shipping With the recent addition of the eight new overtrack cement silos (160,000-bbl. capacity), storage capacity at the Davenport plant now exceeds 1,000,000 bbl. A total of 48 silos are in use (see plant diagram). The new silos, arranged in a single row, are 32 ft. I.D. by 146 ft. high.; they have cone bottoms, which discharge directly to covered hoppers. The new silos are expected to speed loading considerably. Poured by the slip form method, these overtrack silos were the first to be installed in the cement industry. The new silos also possess side portholes to accommodate future truck loading. In addition, a Fuller-Huron Airslide will be installed to transfer cement to the packhouse. Two new track scales, along with new rail extensions, will also be installed shortly.

Cement is delivered to storage from the finish mills by Fuller-Kinyon pumps, two 8-in. and one 6-in., the latter being used for special cements. An additional pump serves to transfer the cement between silos and to the packhouse. A new 9-in. cement line has recently been added to deliver cement to the dock for barge loading. In addition, a new 350-ft. concrete dock for cement loading was added to the 500-ft. coal dock. The cement is discharged into the barges by means of three separate spouts.

Electrical Power To supply the power for the entire plant operation, a 10,000 kv.-a. Allis-Chalmers transformer, equipped with type TLD Load-Ratio Control, was installed in 1952-53. This unit steps down the incoming 69,000-v. current to 13,200 v. before transmitting it to the newly-installed switch gear house. This latter installation is the nerve center for the entire electrical system; it is equipped with G. E. metering, circuit breakers, etc. The electrical system also includes a standby 13,200-v. line.

Integral units in the electrical system include the following: load center No. 1, which serves the kilns and kiln auxiliary units; load center No. 2, which serves the air separators, dust collectors, elevators, pumps, and other auxiliary units in the mill building; a 2,300-v. substation which serves the raw and finish mills; and another 2,300-v. substation which serves the quarry. Each of the two load centers consists of a double-in 1,000-kv.-a. transformer and two double-in. 750-kv.-a. transformers, both of which produce 480 v. The 2,300-v. substation serving the mills consists of a bank of nine 500-kv.-a. single-phase transformers. The quarry substation has three 500 kv.-a. single-phase transformers, which provide 2,300 v. for the Joy drill and the electric shovels. A new double-in 1,000-kv.-a. transformer is now being installed to serve the packhouse and the new silos.

In the revamping of the electrical system, all high tension lines were installed underground as a safety feature. The lead-encased cables were placed in Transite ducts, which were imbedded in concrete.



Left: A view of one of the new substations. This one serves the quarry, and consists of three 500-kv.-a. single-phase transformers; the substation supplies 2,300 v.

Right: The entire plant operation was streamlined recently by the installation of two-way radio communications. Shown here is Floyd Gold at the base transmitter located in that shipping office.

Two Way Radio As a means of streamlining the entire plant operation, two-way radio was installed in 1952. All of the radio units were supplied by General Electric. The main base station, located in the scale house, operates on a wave length of 154.49 mg. Nine 10-watt radio sets and 4 walkie-talkies are used; they are installed in the electric shop, garage, scale house, quarry office, quarry foreman's pickup truck, electrician's truck, supply truck, two company locomotives, and one of the electric shovels in the quarry. The two-way radio not only speeds and facilitates repairs but also aids in many plant operations.

Safety Considerable emphasis is placed on safety at the Dewey plant; and judging from its fine safety record, the efforts have been rewarding. The company has its own safety director and is also very active in both the P.C.A. accident prevention section and in the Cement and Quarry Section of the National Safety Council. Good housekeeping is one of the many safety angles stressed. Mechanical sweepers and recently-installed dust collectors help to make the burning plant one of the cleanest in the industry.

Fire protection is also emphasized. The company operates its own fire truck. Several water mains have been installed on the premises, and plans call for the installation of sprinkling systems in the kiln and mill buildings.

Credits The Central Engineering Company, Davenport, was in charge of the installation of the two new kilns, the new kiln building addition, the new primary crusher in the quarry, and the dock extension. Crosby Construction Company, Chicago, engineered and built the 1949 kiln installation and the 1953 overtrack cement silos. The Pioneer Engineering Works designed and furnished the new belt conveyor in the quarry. The Rock Island Bridge and Iron Works and its subsidiary, the Davenport Steel Company, designed and furnished material for the steel work of the kiln building addition. Electrical work was contracted by Kelsoe Burnett Electric Company, Chicago. The 250-ft. kiln stack was constructed by Alphonse Custodis Chimney Construction Company, using the Econoform method.

Personnel The key operating personnel of the Davenport plant includes the following: Fred B. Hunt, assistant vice-president in charge of operation of this plant, as well as of Dewey's dry-process plant in Dewey, Okla.; E. S. Ernst, plant manager; Harold Egger, plant engineer; J. J. Parsons, plant chemist; George R. Cross, mill foreman; G. N. Roop, master mechanic; N. D. Armentrout, quarry and stone plant superintendent; Carl Rauch, safety director; and C. R. Babcock, electrical foreman. Mr. Hunt has his office in Dewey's main office in Kansas City, Mo.

Executive officers of the Dewey Portland Cement Co. are as follows: Frank E. Tyler, chairman of the board; Waldo E. Tyler, president; Donald M. Tyler, first vice-president; Raymond W. Moore, vice-president and secretary; Walter Gray, vice-president and sales manager; Leo J. Capen, vice-president and sales manager (Davenport); and Daniel W. Tyler, treasurer.

Phosphate Output Passes All Previous 6-Month Totals

Phosphate rock produced in the United States in the first half of 1953, according to reports of producers to the U. S. Bureau of Mines, broke all previous records with a 14 percent increase above the same period in 1952. In previous years this production was recorded as mine production, while actually it was a composite of salable products from washers and concentrators of Florida hard rock, Florida land pebble, and Tennessee brown rock; drier production of Florida soft rock (colloidal clay); mine production of western rock; and tonnages of Florida land pebble and Tennessee brown rock ore (matrix) used directly.

Phosphate rock sold or used in the United States during the first 6 months was 10 percent more than in the same period of 1952, with increases in Florida, Tennessee, and the western states, of 1, 21, and 92 percent, respectively.

Increased production of phosphatic shales in the western states for the manufacture of elemental phosphorus resulted in lower average values for phosphate rock at the mines.

New Bureau of Mines Report On Vermiculite Now Available

How vermiculite, the "worm breeder," became a mineral Cinderella of the 20th century is told in a recently-published Bureau of Mines report entitled "Vermiculite", which was written by O. S. North and H. P. Chandler, Bureau commodity industry analysts. According to the report the property of expanding (or exfoliating) under heat enabled vermiculite to advance from a mineral curiosity before 1915 to the basis of a $16,000,000-a-year industry in the late 1940's and early 1950's.

The report discusses the rainealogy and properties of vermiculite, its geologic occurrences and origin, and domestic and foreign deposits. It also describes the mining and milling of the mineral, and the methods used in exfoliating it, as well as summarizing production, consumption, and prices. An extensive bibliography is included.

A free copy of "Vermiculite" (Information Circular 7668) can be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

THE JAPANESE CEMENT INDUSTRY

An overview of one of Japan's most important manufacturing industries

Condensed from an article published in a recent issue of *Far Eastern Economic Review* (Hongkong)

WITH the outbreak of the Korean war in June, 1950, the Japanese economy enjoyed a war boom for several months, but was soon confronted with a recession after 1951 brought about by the "stretching out" of the rearmament programs of the U.S.A. and other countries and by the commencement of armistice negotiations in Korea. In consequence of this recession, prices of cotton, oils, fats, hides, leather, and crude rubber, for the supply of which commodities Japan is wholly or almost wholly dependent on foreign sources, tumbled down. This price decline has gradually spread from consumer goods to producer goods and motive power, and along with this process of price adjustments among the various industrial divisions, the business recession has steadily deteriorated.

In spite of such adverse general economic conditions and though not entirely free from their impact, the Japanese cement industry has been able to make satisfactory progress and development, thanks to the abolition of control since January, 1950, and to the active demand for cement both at home and abroad for reconstruction works, as well as to the active demand from government and other public agencies. The demand from the latter generally lags behind the demand from other quarters. Reflecting this active demand, cement production in 1951 reached an all-time high and has since continued to increase, though at a decelerating rate.

However, in view of the fact that world production of cement has already considerably exceeded the prewar level and in view of the general completion of the reconstruction of war-devastated facilities and the present stagnancy of rearmament expansion, the outlook for the export of Japanese cement, priced as it is (higher than the international level), is such that there is a poor prospect for a phenomenal expansion of its export in the future. Nevertheless, it is expected that continued progress will be made under the support of increasing domestic demand for the development of hydro-electric power resources and for the construction of public works.

Recent Production Trend

For several years following the termination of the last war, cement production in Japan, despite the active demand for it, had failed to increase appreciably because of the shortage of coal, production and price controls under a low-price policy, and the wartime destruction of cement manufacturing facilities. However, with the increase in earnings resulting from the lifting in 1950 of the controls that had been in force for some ten years and from the revaluation of assets, and under the impetus of active demand generated by the expansion of public works, development of electric power resources, and the prosecution of worldwide rearmament following the outbreak of the Korean war, cement factories were rehabilitated and expanded, with the result that cement production increased phenomenally month after month since 1950. Production in 1951 reached 6,531,000 metric tons, which was 5.3 percent above the prewar peak of 6,200,000 metric tons achieved in 1939 and 24.9 percent above the 1934-36 (prewar standard) average level of 5,228,000 metric tons (see Table I).

TABLE I
Production, Deliveries and Stocks of Cement and Clinker
(In Thousands of Metric Tons)

Calendar year	Production		Deliveries		Stocks at End of Year or Month		
	Cement	Clinker	Cement	Clinker	Cement	Clinker	Total
1950	4,451	4,374	4,485	13	184	85	269
1951	6,531	6,936	6,551	39	162	144	306
1952	7,983	7,042	7,023	2	222	175	397

With the change in the situation upon entering 1952, the rate of production increase fell off considerably and for a time (during June and July) production fell below the level for the comparable period a year ago. The annual production increase during 1952 was about one-third of the annual increase since 1949. This deceleration in the rate of increase may be ascribed to (1) completion of the reactivation of existing machinery through the rehabilitation, remodeling and transfer of idle facilities and (2) slowed-down increase in the demand.

Because production lagged behind demand during 1950 and 1951, stocks of cement and clinker fell below the normal level of one month's consumption by the end of 1951. However, since the beginning of 1952 production has steadily caught up with demand and has resulted in a slight increase in stocks.

Changes in the equipment capacity and operating rate since 1949 are shown in Table II, based on estimates of the Cement Association. Accurate data is unavailable following the discontinuance of official assessment of productive capacity ever since the abolition of control in 1950.

It will be seen that the rate of increase in productive capacity has slowed down after 1951 and that the monthly productive capacity as of the end of 1952 was still below the highest prewar capacity of 1,198,000 metric tons registered in 1939 (survey by the Cement Federation). However, by the spring of next year, when two cement factories now under construction are scheduled to be completed, the capacity will about equal the prewar high real capacity computed by the Fair Trade Commission at 885,000 metric

TABLE II
Changes in Cement Manufacturing Facilities

At End of	No. of Companies	No. of Factories	No. of Rotary Kilns	Monthly Capacity* (1,000 Metric Tons)	Average Monthly Production (1,000 Metric Tons)	Operating Rate† (%)
1949	15	33	65	440	—	—
1950	14	33	80	640	371	68.7
1951	14	33	85	707	544	80.7
1952	14	35	90	748	590	81.0

*Monthly capacity computed on a 25-day operating basis.
†Percentage of the average monthly production for the calendar year against the arithmetic average of the monthly capacity as of the end of the previous year and as of the end of the current year.
Sources: Ministry of International Trade & Industry for 1949 figures; Cement Ass'n for 1950 and subsequent years' figures.

METALLURGICAL RESULTS OF DENVER "SUB-A" FLOTATION AT MINERVA OIL COMPANY.

63.5% Grade Zinc—95.83% CaF_2 *

Heads		Recovery	Concentrate Grade	Tailings
CaF_2	29.60%	92%	95.83 to 87.47%	3.40
Zn	3.80%	96.20%	63.5%	0.15

63.5% grade Zinc concentrate also contains 0.95% Cadmium and 0.025% Germanium.

* 3 grades CaF_2 are produced: No. 1 Ceramic (95.83% CaF_2); No. 1 Special Fluorite (93.65% CaF_2); and No. 2 Ceramic (87.% CaF_2).

At this property, requirements are for highest possible recovery and to produce ceramic grade concentrates. Producers of acid grade spar, where extremely high grade CaF_2 concentrates are required, use Denver "Sub-A" flotation exclusively.

—Complete report of Minerva Oil Company's flotation of Fluorspar appears in March-April 1953 DECO TREFOIL as DECO Engineering Bulletin No. M4-B65.

—Complete report of Ozark Mahoning Company's Acid Grade Fluorspar Production at Northgate, Colorado, appears in November-December 1953 issue of DECO TREFOIL as DECO Engineering Bulletin No. M4-B69. Sent on request.

100% Denver "Sub-A" Flotation in World's Largest Fluorspar District

Illinois-Kentucky Fluorspar field—the world's largest—uses Denver "Sub-A" Flotation 100%.

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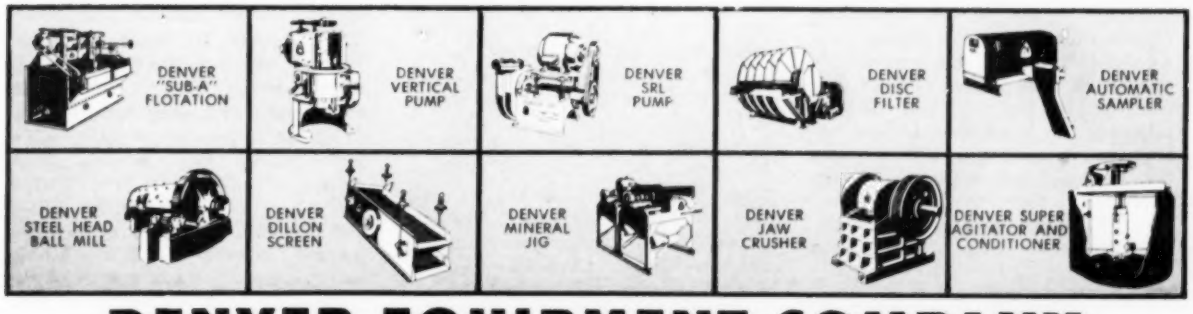


DENVER EQUIPMENT COMPANY

1400 SEVENTEENTH STREET DENVER 17, COLORADO

tons, instead of at 1,198,000 metric tons, after giving due consideration to the fact that prewar expansion of capacity consisted mainly of rotary kilns without accessory equipment, because the number of rotary kilns possessed by each cement company was used as the basis for the allocation of production quotas under the cartel system in existence until then.

As regards the operating rate since 1949, no accurate computation can be made because of the frequent transfers and remodeling of equipment, besides its expansion, during this period. It appears, however, that the operating rate has generally remained at about 80 percent of capacity, which is considered the most appropriate rate for this industry.

Incidentally, as of the end of 1952, rotary kilns used for cement manufacturing consisted of 67 units (75 percent) for the dry process, 20 units (22 percent) for the wet process, and 3 units (3 percent) for the semi-wet process. The fact that the dry process is predominantly used is apparently due to the excellent quality of limestone available in this country.

Recent Demand Situation

After the last war there was a sharp increase in the demand for cement for the rehabilitation of war-devastated facilities, modernization of buildings with fireproof materials, construction of roads necessitated by a heavy increase in automobile traffic, construction of bridges, development of electric power resources and construction of public works, etc. Besides, there was an active demand from Southeast Asia and other areas under the war boom which spread to these areas upon the outbreak of the Korean war. However, with the stagnation of world rearmament since the beginning of 1952 and with the increase in the cement exporting capacity of Western European countries especially, the demand for cement at home and abroad has of late tended to level off.

In the prewar period, Japan had ranked fifth among the cement-producing countries of the world. Although its rank fell to 13th at one time in the postwar period, the prewar rank has been recovered recently. However, since production in the principal cement-producing countries (other than the Soviet Union) has increased from a monthly figure of 6-7 million metric tons during 1936-39 to 10-11 million metric tons during April-June, 1952, it appears that each of these countries has by now considerable surplus exporting capacity. This fact is worthy of note, together with the relatively high price of Japanese cement and the dollar shortage in the cement-importing countries.

For fiscal 1953 the Ministry of International Trade & Industry estimates a total demand of 8,200,000 metric tons. Although this goal may not be easily achieved, increased demand can be expected for the development of electric power resources and public works. In view of this prospect of continued increase in demand, it is believed that demand will remain firm for some time to come.

Price and Profit Yield

As regards the profit yield on operations, accurate figures are not available, but it is reported that a profit of between Y1,000 and Y1,500 per metric ton is realizable under present domestic market conditions, considering the conditions of the export market. For the semi-annual term ending between September and November, 1952, the Nippon Cement, Onoda Cement, and Osaka Yogyo Cement companies realized an average profit of 13.6 percent on the net sales, compared with 6.5 percent for the previous term. According to a survey by the Tokyo Securities Exchange, the average dividend paid on the paid-up capital by five of the principal cement companies was 39.5 percent p.a., compared with 13.4 percent for banks and insurance companies, 30.6 percent for mining companies, and an overall average of 24.3 percent for 481 listed companies which declared dividends for the first term of 1952.

Expansion Programs

According to a survey made by the Ministry of International Trade & Industry, nine cement companies have expansion programs for the construction of 10 factories and 12 rotary kilns, with a total monthly productive capacity of 134,000 metric tons. All of these programs are either under prosecution of have completed ground-breaking ceremonies. The fact that all but one of the 12 rotary kilns are new (the other being an old kiln to be repaired and transferred to a new factory) is a new phenomenon, which is in sharp contrast to the practice heretofore of mainly rehabilitating idle kilns in order to expand production. It is also significant to note that the nine companies planning expansion of equipment comprise one newcomer (Tohoku Cement K.K.) and one soda manufacturing company (Toyo Soda K.K.), besides the seven existing cement companies. Of the 12 rotary kilns included in the expansion programs, four (with a total monthly capacity of 41,000 metric tons) were scheduled to be completed by April, 1953, two (24,000 metric tons) by September, 1953, four (42,000 metric tons) by December, 1953, and two (27,000 metric tons) by March, 1954. As the result of these expansions the total monthly productive capacity of the cement industry will increase to 882,000 metric tons by March, 1954, a capacity which will approximate the highest prewar real capacity when due account is taken of the deficiency in accessory equipment of the prewar cement factories.

It is likely that expansion or renovation of equipment will be continued in view of the present firm tone of demand, the good earnings of the cement companies, and the considerable percentage of antiquated equipment still in operation.

Conclusion

It was not until 1950 that the Japanese cement industry was freed from production control under either a cartel system or state control. Since then the various modernization measures adopted by the industry after the end of the last war have proved very fruitful, especially after the outbreak of the Korean war, and the industry has enjoyed prosperity even under the recession that has set in following the war boom. Lately, however, Japanese cement is priced higher than the International level, while the domestic demand has tended to level off somewhat. Nevertheless, in view of the very high degree of self-sufficiency of the cement industry in respect to raw materials and considering the good quality of Japanese cement due to the excellent limestone found in this country, effort is being made to reduce the cost so that cement export may become a good earner of valuable foreign exchange. Moreover, the domestic demand for cement is expected to increase to meet the needs of government agencies and power development. So there is a fair prospect for continued progress in this industry, which is counted among the promising industries of Japan at a time when many others are suffering from the business recession.

Construction on the Reynolds Talc Company mill at Talcville, N. Y., the only mill in that area, is now under way by the Rouse Construction Company, Gouverneur. Preparation of the adjoining quarry for open-pit talc operation is also scheduled.

Review and Forecast

Construction

Banner Year Seen for Pit and Quarry's Biggest Customer; 1953 Sets Record

By JOHN PETER FLYNN

The only tunnel in the Texas highway system

BREAKING previous records, new construction in the United States topped $34.7-billion during 1953. This is $2.4-billion better than the previous all-time high in 1952.

Looking into a slightly blue version of the crystal ball, the pundits forecast a "mild contraction" in new construction during the year ahead. The US departments of Commerce and Labor, putting their collective heads together, foresee a volume of $34-billion for 1954, two percent off the pace set this past year.

Other authorities tend to accept the government figures. Most seem to agree that certain phases of construction will drop off, notably building for housing and industrial plants.

No figures are available on the amount of construction involved in repair and maintenance work, but it is estimated to run close to the $10-billion mark. Add this to the figure for new construction and the nation's building "nut" for 1954 will run around $44-billion. That will buy a lot of pit and quarry products!

Private sources are expected to spend about $22.8-billion for new construction during 1954, while government outlays will add $11.2-billion. The decline is forecast to run about three percent in private work.

Declining defense spending in public construction will be offset by increased highway construction, estimated to rise 10 percent in 1954, the federal government says. Reports direct from the states (noted later) indicate, in some instances, that this is a conservative figure.

Everyone is agreed that the need for adequate roads is tremendous today, and is growing faster than new construction can keep up with it. This means a backlog of construction for a long time. Throughout the nation new answers are constantly being sought as to ways and means of providing the financing needed to do an adequate job *now*. See the rundown on toll roads, page 101.

Behind any forecasting attempt, the "big unknown" always revolves around the state of the country's economic system. The pundits—public and private alike—agree, as usual, in only one respect where this is concerned: "The other fellow's all wet". The propaganda needs of political affiliations tend to muddy the actual picture.

Slight Adjustment Due

With everyone else in the act, we'll jump too: Realignments of a mild variety seem to be in order for the months ahead. The past decade has not yet been fully assimilated by the nation, and bloated conditions that exist in many phases of our economy must be adjusted. Meanwhile, the new administration strives to establish an economic policy attuned to its aims and purposes and the needs of America and the free world.

There is little danger of a widespread recession, let alone a depression, despite the loudly voiced fears of Democratic and left wing "voices of doom". Our economy is basically quite healthy, sturdy and self-reliant. What we need is the "time out" for reassessment (and trimming where needed) that is a vital part of every well-run business, as well as of our individual daily lives,

The dynamic nature of our way of life, based in the aggressive individual initiative which distinguishes the American dream, has created a tremendous backlog of needs and yearnings for bigger and better things. A constant, unyielding pressure for their fulfillment is found across the length and breadth of the land.

"Expanding individualism in an expanding universe" breeds a national restlessness that bodes well for the construction industry for many years to come. Note the booming South—changing almost overnight from an agrarian Cinderella to a modern industrial belle. Note the growth along the Pacific, both in population and in industrial enterprise. Note the decentralization of industry from the older centers, which seem to take the loss in their stride and keep on growing anyway!

Everyone owns a car today (or so it seems to anyone who has been downtown lately!) . . . and most of them appear to be moving to the suburbs to live. Practically every city in America is bursting out at the seams, and new and projected apartments, private homes, shopping centers, drive-in theatres, airfields, etc. dot the nation in evidence.

Expressways are two way streets. They bring the city folk to the suburbs and the outlanders into the city's heart, which is far from dying. Older blighted areas are being rebuilt in every town, modern parking facilities are going up to handle the ubiquitous automobile, heliports are being planned—and so on and on—keeping up with the inexorable march of progress.

Whether you look at it short range or long range, there's plenty of life in the American system. And there's an awful lot of construction in the works to keep suppliers of non-metallic mineral products busy for a long time.

Housing Private spending for dwelling construction, estimated at $9.7-billion for 1954 will be about seven percent below last year, because of a moderate decline in nonfarm housing.

Farm construction, which ran $1,475-million last year, is expected to drop 12 percent in 1954.

However, the dollar outlay for home improvements, in the form of additions and alterations, may advance by almost a fifth, reflecting both the growth of families and the increasing rehabilitation of declining neighborhoods.

Private mass housing construction ran 15 percent ahead of 1952 in dollar volume last year, an all time high.

About 1.1-million new home units were built in 1953, with a value of nearly $12-billion. The industry hopes to maintain this level, and to put added emphasis on low income level homes. It hopes also to recondition a quarter-million homes through trade-ins and put them back on the market for lower income groups, and to rehabilitate up to 750,000 units under law enforcement programs and urban redevelopment.

Institutional Buildings Religious, educational, social and recreational building will get more money in the year ahead than last year, reflecting, no doubt, the growth and shifts in population. Hospitals and other institutional projects are scheduled to drop, however, marking the decline in veterans hospital facilities. Public expenditures are forecast for nearly $2-billion worth of educational projects (an 11 percent jump), and $275-million in hospitals and institutions, a 19 percent drop. Private monies will erect well over $1.4-billion worth of structures in this group.

Commercial Buiding The private construction of warehouses, offices and lofts in 1954 will run ahead of 1953 by about 15 percent. A total expenditure of about $850-million is expected. Stores, restaurants and garages will cost about $1.1-billion, an increase of six percent over last year.

Industrial Building Factory construction during 1953 was almost $2.3-billion for privately-financed projects and about $1.8-billion for public enterprises. A drop in forecast for the year ahead. Private construction will run about $2-billion; public decline to $1.6 billion.

Highway Building The nation's roads need every penny that can be put into them, and will still be far from adequate for the tremendous traffic loads they now bear. As a result the states, counties and even cities are floating special bond issues, creating toll commissions, and the like in order to cope with the problem of financing vitally needed projects that cannot be undertaken with normal revenues. Nearly $3.5-billion is expected to go into the nation's roads in 1954, a jump of 10 percent over 1953's high of $3,145-million.

The Federal Aid budget for 1954 calls for $575-million to be distributed among the states, as follows: primary highways, $247.5-million; secondary highways, $165-million; urban highways, $137.5-million; National System of Interstate Highways, $25-million.

Highways in the National Forests will receive $22.5-million worth of improvements during 1954. Seven states will get the lion's share of this, headed by California, which gets $3,219,000. Oregon gets $3,098,000; Idaho, $2,290,000; and Montana, Colorado, Washington and Arizona get better than $1.2-million each. Alaska will get close to $2-million.

Public Utilities Public utilities are expanding in every section of the nation, and $4.6-billion will be expended in 1954 in behalf of railroads, telephone and telegraph, pipelines, electric power, gas, etc. — a three percent increase.

Communications, power and transport are constantly being pressed to keep up with the expansion of our country and the shifts and changes in our individual ways of life.

The use of atomic energy for power plant purposes is literally just around the corner, and promises to begin augmenting the nation's power facilities in a short time.

Civil Defense The Federal Civil Defense Administration does not anticipate any large volume of public-financed shelter construction during 1954, but is encouraging the building of home type shelters and expects a substantial increase in this.

Tax incentives are granted to private industry for construction to protect essential facilities, personnel, etc. The volume of construction in this category is expected to expand considerably in 1954.

THE CONSTRUCTION PICTURE — 1953-1954

(Estimates from the U.S. Departments of Commerce and Labor)

Type of Construction	Millions of Dollars 1953	1954	% change
Private Construction Total	**23,430**	**22,800**	**— 3**
Residential (except farm)	11,715	11,225	— 4
New Dwelling Units	10,345	9,650	— 7
Additions and Alterations	1,101	1,300	+ 18
Nonhousekeeping	266	275	+ 3
Nonresidential Building	5,689	5,575	— 2
Industrial	2,263	1,950	— 14
Warehouses, Office and Loft Buildings	740	850	+ 15
Stores, Restaurants and Garages	1,035	1,100	+ 6
Religious	473	500	+ 6
Educational	423	450	+ 6
Hospital and Institutional	313	300	— 4
Social and Recreational	161	175	+ 9
Miscellaneous	281	250	— 11
Farm Construction	1,475	1,300	— 12
Public Utility	4,430	4,575	+ 3
Railroad	480	475	— 1
Telephone and Telegraph	600	625	+ 4
Local Transit	30	25	— 17
Pipeline	270	300	+ 11
Electric Light and Power	1,825	1,900	+ 4
Gas	1,225	1,250	+ 2
All Other Private	121	125	+ 3
Public Construction Total	**11,290**	**11,200**	**— 1**
Residential	551	365	— 34
Nonresidential Building	4,339	4,275	— 1
Industrial	1,786	1,600	— 10
Educational	1,742	1,925	+ 11
Hospital and Institutional	341	275	— 19
Other	470	475	+ 1
Military and Naval	1,360	1,200	— 12
Highway	3,145	3,450	+ 10
Sewer and Water	760	825	+ 8
Miscellaneous Public Service Enterprises	196	200	+ 2
Conservation and Development	833	750	— 10
All Other Public	105	135	+ 29
Total New Construction	**$34,720**	**$34,000**	**— 2**

Grade separation, Illinois

Corps of Engineers The Army Engineers, serving both the military program and civil works, will spend about $2-billion during the current fiscal year, ending June 1954. This is a reduced scale from the previous year. It includes $940-million for army and air force construction and $520-million for civil works.

Bureau of Reclamation Funds available for the current fiscal year (1953-54) totalled $184-million, of which $155-million was earmarked for projects in 17 Western states and Alaska. The Bureau spent more than $158-million in new construction during the first 10 months of 1953, and had $379-million worth of contracts in force during October.

Reclamation estimates that it will need 705,000 bbls. of cement in 1954 for projects in 14 Western states and Alaska, continuing work already underway or beginning new work.

Miscellany Publicly-financed sewer and water facilities, conservation and other public service functions will spend nearly $2-billion during 1954, a slight jump.

Military and naval facilities, for which $1.4-billion were spent in 1953, will get about 12 percent less this coming year, about $1.2-billion.

The atomic energy plant construction program, $2.3-billion in 1952, dropped to $60-million during 1953. No forecast is offered for 1954.

Air travel has increased by leaps and bounds, necessitating more and larger airfields. Helicopter facilities are in use or planned for virtually every major city's downtown area, and one authority recently forecast that within 10 years they will handle passenger transport on all inter-city hops up to 300 miles.

Television, jumping fast into color transmission and into greatly expanded ultra high frequency broadcasting, will expand its networks throughout the land.

Truckers and railroads are contemplating a system whereby the rails will carry loaded motor trailers between cities. Terminal facilities would have to be built as a result.

The traffic situation, aggravating virtually every major city, is being tackled in many ways—huge garages, underground caves, and such, all requiring construction.

The construction of the St. Lawrence Waterway promises to open up the Great Lakes to ocean-going traffic, and create new problems in transportation, rail and dock facilities for these communities, while contributing to an even greater growth in this section of the continent.

Toll Road Activities

Arkansas: The Legislative Council is studying toll road financing ordered of the 1953 Legislature after a toll road act had been vetoed.

Connecticut: Early sale is planned for a bond issue to begin the 125-mile cross-state route from New York to Rhode Island, to cost over $200-million.

Florida: The acting governor has named a new turnpike commission and wants to proceed with a "bob-tailed" toll road extending some 103 miles northward from Miami, estimated to need $62-million.

Georgia: The governor is backing a bill to OK a cross-state 300-mile highway, costing $225-million. Some 80 miles of it (4-lane) is already in use or near completion. A new bridge and turnpike authority is planned to supervise this and other projected toll roads and bridges.

Indiana: A $280-million bond issue will finance the 150-mile superhighway across northern Indiana, from the Ohio Tpk to Illinois.

Illinois: A state expressway system that will cost $800-million will be well underway within two years. Chicago will be hub of the system, but it is likely that the first leg will join East St. Louis with Mount Olive. Other possible routes would: traverse US 66 from Chicago to St. Louis; cross the state from the Indiana Tpk to Iowa at Moline; follow old state highway 1 on a Great Lakes to Gulf of Mexico route; cross southern Illinois from St. Louis towards Indianapolis.

Kansas: A preliminary report is awaited on the feasibility of a toll road connecting Kansas City-Topeka and Wichita.

Kentucky: Litigation on the validity of the toll road act is holding up the $30-million Louisville-Elizabethtown route.

Maine: Construction is underway on the $55-million extension of the Maine Tpk from Portland to Augusta, to be ready in 1955. The Portland-Lewiston link will open in '54.

Massachusetts: Bonds for the $200-million cross-state route go on sale shortly.

Michigan: A bond issue of some $215-million is planned to finance the 176-mile proposed road west from Detroit towards Chicago, linking several cities and joining the Indiana Tpk. Surveys are also underway on a $100-million pike from Bay City to Detroit, to join another going towards Toledo.

New Jersey: The $28-million Garden State Parkway is scheduled for completion this year by the Highway Authority. The Turnpike Authority has sold $150-million in bonds to finance a Newark Bay-Hudson County extension connecting with the Holland Tunnel.

New York: The Thruway still had 17 miles of its 427-mile route to be let Dec. 1st. The Authority has already contracted $6-million more than the $500-million originally authorized. More money is needed for gas stations, restaurants and rights of way. Four feeder routes totalling 108 miles and a 5-mile link to the Jersey Turnpike must also be built.

The Buffalo-New York City section, to be completed late this year, will handle 55-million trips in its first year. Of these 85 percent will be passenger vehicles, running an average of only 34 miles each, forecasts indicate.

The Jones Beach State Parkway is to market a $30-million bond issue for improvements on highways serving this resort area.

North Carolina: Toll highway construction is planned by a special Authority. The first problem will be the handling of traffic from the West Virginia Tpk.

Ohio: Some 22 miles of the 241-mile Northern Tpk will be opened late this year, connecting Ohio 18 with the Pennsylvania Tpk. Funds

Old and new Neches River bridges, Beaumont, Texas

are being sought for a 300-mile road to connect Cincinnati with Conneaut, diagonally across the state.

Oklahoma: Attempts are being made to gain approval for three more toll roads — from Tulsa towards Joplin, Mo.; from Oklahoma City towards Wichita, Kan.; and from Oklahoma City towards Texas on the way to Wichita Falls.

Pennsylvania: A 125-mile northeast extension of the Turnpike, costing $250-million, is to be built shortly, connecting Philadelphia with Wilkes-Barre and Scranton and extending to the New York line near Binghampton. It will cost more than all previous Pennsylvania Turnpike construction put together. Surveys are being made for another extension to run to Erie. The 33-mile stretch from King of Prussia to the Delaware River will be finished this year.

Texas: A toll road now being studied will connect Dallas and Fort Worth at a cost about $30-million. A private turnpike firm seeks to build a $150-million north-south toll road from north of Gainesville through Dallas county toward Corpus Christi.

Virginia: Cool towards a toll road to handle traffic from the West Virginia Tpk., the state highway department is seeking a special toll road authority to build a route through Richmond and Petersburg.

West Virginia: Costs for the turnpike have exceeded by more than $20-million the $60-million originally estimated.

Wisconsin: A cross-state toll road from Minnesota to the Illinois border, estimated at $170-million, is under study.

Reports from State Highway Departments

ARIZONA — It is estimated that 1954 will show a slight gain over 1953, with an anticipated 175 miles to be built at a cost of $16½-million. About 170 miles, built in '53 cost $16-million.

Twelve major projects scheduled for letting during the first half of 1954 are estimated at $6-million. Seven others, to be let in the second half, total about $2-million.

Noteworthy items in the 1954 plans include the completion of the grade and drain state of the Cordes-Camp Verde leg of the Black Canyon Highway, several surfacing projects, and the construction of two bridges, underpasses and approaches on US 80 between Mountain View and Pantana.

CALIFORNIA — Possibly the largest state highway budget in the Union (exclusive of toll road programs) has been established for the 1954-55 fiscal year by the California highway commission. It totals just under $300-million, and will see $205-million go into major construction projects.

The budget for the current fiscal year calls for $247-million to be spent, of which $190-million is for major construction.

Among the 180-items in the construction budget the largest is $8½-million for 3.9 miles on the Ramona Freeway through and past El Monte. Second largest allotment is $6-million for 4.7 miles of US 40 on its new freeway location in Contra Costa County.

In the Los Angeles area, among other projects, the Hollywood-Santa Ana Freeway connection will be completed, providing more than 43 miles of multi-lane full freeway continuous except for the portions through Anaheim and Buena Park; Ramona Freeway will be extended through El Monte; the Harbor Freeway, currently in construction as far south as Santa Barbara Avenue, will start reaching northward from San Fedro; the Colorado Freeway will be extended westward from the new Pioneer Bridge in Pasadena; and a start will be made on the Sepulveda Freeway.

In the San Francisco Bay Area, we shall see under way the direct connection between the Bayshore Freeway in San Francisco and the Bay Bridge; the completion of the widened East Shore Freeway north from an enlarged Distribution Structure to El Cerrito; a new freeway connection from the East Shore Freeway to the Dublin Canyon Freeway section of US 50; freeway development in downtown Oakland; and a real start on the new freeway section of US 40 in western Contra Costa.

Freeway by-passes of the congested business districts of Fresno, Salinas, Arcata, Banning, Petaluma and other cities will be initiated or continued in the new budget. San Diego will see the start of a new east-west freeway on Route 94.

On major intercity routes, progress is no less impressive. By the time all the funds allocated in the 1953-54 budget and the new budget have been expended, only a very limited mileage of US 99 between Los Angeles and Sacramento will remain to be improved to multi-lane divided highway standards. The expressway construction of US 101 between Los Angeles and San Francisco is going ahead at a rapid pace; and 101 north of San Francisco — the Redwood Highway — is losing more and more of its curves, grades and congestion. More multi-lane divided miles are being added to US 40, US 50, on US 60-70-99 in Riverside County, and on portions of US 99 north of Sacramento.

COLORADO — The total highway improvement program undertaken in 1953 — including major construction work under contract or advertised, agreements between state and cities and counties, oiling and traffic installations — amounts to 204 projects, covering 1,121 miles, at a total cost of $29,131,000.

The department expects to have available for major highway construction during 1954 about $21-million, half of which is available in previously budgeted projects.

Beginning with January 1954, the state highway department virtually doubles its maintenance operations, taking over nearly 4,000 miles of federal-aid secondary roads hitherto maintained by the counties. This is the result of a "big switch" wherein thousands of miles of highways have changed hands, and new state, county and city road systems come into being. Because of the added maintenance work, over half a million dollars has been spent for new equipment, and $1.3-million set aside for maintenance during the first six months.

CONNECTICUT — Payments on highway construction projects for 1953 amounted to about $12-million.

We propose to award construction

contracts for approximately $17-million in 1954.

In December 1952 our urgent highway needs were estimated at about $375-million. Contracts awarded in 1953 accounted for about $6-million of these needs. Thus there remains a balance of approximately $370-million. It will not be possible to apply the entire $17-million planned for contract award in 1954 to this urgent needs program.

For 1954, in addition to starting the proposed cross-state expressway, we plan to construct two sections of the Waterbury Expressway and the reconstruction of the route 133 bridge over the Housatonic at the Bridgewater-Brookfield town line.

FLORIDA — It Appears That We Will Have About $50-Million Construction and $8-Million Maintenance Program in 1954.

ILLINOIS — A record $84½-million will be spent on highways during the coming year, topping the 1953 record, when the first eleven months reached $76,164,000. New contracts in 1953 totaled $58½-million.

Approximately 472 miles of highway projects are planned for 1954. Major items are 160 miles of new roadway, and the resurfacing of 286 miles of existing highways. The new roads will comprise 59 miles of two-lane, 58 miles of added lanes, and 42 miles of 4-lane construction.

The modernizing of US 66, major feature of last year's program, continues this year, with 72 more miles due to be converted into a 4-lane road. Seventy-one new bridges are planned, 37 others will be widened, and 20 grade separations will be built.

In Cook county alone, $17,370,000 will be spent, of which $13-million will go for the metropolitan expressway system.

The City of Chicago let about $5-million in superhighway construction contracts in 1953, and expects to spend nearly $15-million during the year ahead.

A steel and concrete bridge is to be built over the Mississippi to St. Louis by the village of Cohokia, Ill., at a cost of $10-million.

IOWA — Iowa expended for the construction of farm to market roads and primary roads during the fiscal year of 1952-1953, the total amount of $53,834,000. This is slightly above our current income but it was catching up with some of the work that could not be completed in the previous fiscal year on account of delay in steel delivery.

We anticipate for the calendar year of 1954 that we will expend $49 to 50-million for construction on primary and farm to market roads.

KENTUCKY — During the last fiscal year the total disbursements of the Kentucky Department of Highways was $70,567,713. Approximately $30-million was for construction. Some $15-million is required for maintenance of the state system each year. Five million dollars go to a program for aiding the counties with their roads and approximately $13-million is used to improve the rural and secondary system of roads in the state up to the point where they may be absorbed into the state system.

During the coming year the program will remain at the same level since our revenues come from motor user taxes and do not fluctuate widely. In addition to its regular planned work, the Department proposes to begin work on a 40-mile toll road running from Louisville south to the vicinity of Elizabethtown.

It has been estimated that it would require at least $160-million to bring up to modern standards the major thoroughfares in Kentucky.

MAINE — The highway commission is operating on the second year of a seven-year accelerated program.

In fiscal 1953-54, we are budgeted for the sum of $32,400,000. As our accelerated program was compiled in 1949, costs are roughly 25% in excess of the estimates. Increases in revenue are not expected to make up the difference, thus affecting the results of the program.

MARYLAND — Ninety-one projects, valued at nearly $26½-million were advertised during 1953, and only slightly more than half a million remained to be awarded as the year ended. These covered over 218 miles.

The 1954 program, still incomplete is expected to call for $50-million on primary road construction alone, plus substantial amounts for secondary roads.

The state advertised 33 primary road construction projects during 1953, with a total value in excess of $15½-million.

MICHIGAN — Contracts let in 1953 for construction on the state trunkline system totalled $37,655,000. Roughly the same amount will be available in 1954. The state spent some $17-million for maintenance on the primary system last year, and expects to add half a million to this figure for 1954.

In addition, some $18½-million was awarded in lettings for the Ford and Lodge expressways in Detroit, as obligations against an $80-million bond issue. Work contracted for the Toledo-North expressway amounted to $13¼-million, against a $20-million bond issue.

During 1953, the trunkline system completed 108 miles of concrete pavement, 316 miles of bituminous concrete surfacing on old pavements, 533 miles of other bituminous surfacing, 120 miles of aggregate surfaces mostly due for future bituminous surfacing, 67 new bridges and grade separations, 51 RR crossing flashers and 24 RR crossing reconstructions. The department also spent $111,000 for shoreline protection along US 12 near St. Joseph. Shore erosion was less acute during 1953, however, because of lower lake levels.

The state highway department lets all county road work involving federal aid funds, and assists in their supervision. Over $6½-million will be available during 1954. Last year, 132 contracts were awarded for $5½-million, several let late in the year for completion in 1954.

Considerable progress has been made on Detroit's two expressways,

Monticello Dam, now being built in California

and substantial portions of the east-west Ford and the north-south Lodge routes will be under contract during 1954.

The 4-lane, limited access Toledo-North expressway is well under way, and about one-third of the structures are now being built. It is planned to link this route with the Toledo City expressway and the Ohio Turnpike at one end, and US 24, US 25 and a possible Fort Street extension in Wayne county at the other end.

The Detroit-Chicago expressway is progressing, with bypass routes planned or being built around several cities along US 12, plus several connections to other cities.

Both the Toledo-North and the Detroit-Chicago routes are expected to be taken over by the new Turnpike Authority, in which case the state (and the city of Monroe on the Toledo route) will be reimbursed for monies already expended.

MISSOURI — The 10-year highway modernization program will cost about $55-million in its second year (1953-54). This is higher than the 1952-53 allocation of $51-million, but is still under the $56-million average that must be maintained each year if estimated minimum needs are to be met.

Although subject to variation, the state expects to spend about $29-million for major highways outside the cities, $14-million for urban work, and $12-million for supplementary roads. About $17-million was placed under contract in the second half of 1953.

The second year's program includes about 600 miles on major systems outside cities, of which 435 miles would be actual construction, the balance future right-of-ways.

MONTANA — It is anticipated that state highway construction work will get about $14-million during 1954, an increase of one million over expenditures during the past year.

Three projects recently let for completion during 1954-55 totalled about $1.8-million: grading, gravel surfacing and road mix oiling of US 87 and 89 for four miles at a cost of $736,590; erecting a steel and concrete bridge over Flathead River on Somers-Big Fork road, to cost $497,000; and grading, gravel surfacing and draining US 93 for 4.6 miles at a cost of $539,550.

NEBRASKA — Expenditures of the Bureau of Highways in 1953 were about $22,113,000, of which $8-million went for maintenance, about $660,000 for administration and overhead, and the balance for construction.

Contracts for improving over 300 miles of state highways were let at a total cost of about $9,600,000.

Awards scheduled for 1954 will cover 465 miles and will cost about 17.6-million.

According to the sufficiency rating studies, the cost of improving all sections of state highways rated below 70 percent would be $152-million.

Not included in the above figures is the work supervised by the department where federal funds are matched by cities or counties.

NEW JERSEY — Over $25-million is earmarked for highway construction during the present fiscal year, ending June '54. The Palisades Interstate Parkway gets $6-million of this, and route 44 in Gloucester has $5½-million allocated to it.

NEW MEXICO — During 1953 contracts for highway construction totalled a little over $17-million. Maintenance expenditures passed the $6-million mark and other expenditures used another $7-million, making the total for the year about $30-million.

In 1954, the department plans to spend $34 to $35-million. Construction should use $21 to $22-million and maintenance $6½-million.

Outstanding projects that will be under construction in 1954 include 34 miles between Corona and Carrizozo on US 54, completing the paving of this important route across New Mexico. Another project will complete a paving program between Ojo Caliente and Chamia on 285.

A third major project is a bridge across the Rio Grande on US 85 at Albuquerque.

NORTH CAROLINA — As of January 1954 we will have approximately $60-million on hand for new construction. This includes federal funds for fiscal 1954-1955 and a large carry-over of federal funds for 1953-1954. It is very unlikely that the total $60-million will be placed under contract during the next calendar year but we can probably contract for about $45-million.

In addition to the above, we have betterment funds in the amount of $14,500,000 which will be used either on new construction or heavy maintenance. We have a retreatment fund of $7,800,000 which will be used in resurfacing existing bituminous pavements.

Our appropriation for maintenance on state highways is $8,750,000 and for county roads $20-million. (This State is responsible for the improvement, construction and maintenance of all county roads.) We also have set up $2,500,000 for the maintenance of state highways and county road connections in our incorporated cities and towns.

NORTH DAKOTA — During the year 1953 approximately $11-million was spent for highway construction. A similar expenditure is contemplated in 1954 and tentative plans include 178 miles of grading, 151 miles of base and asphaltic concrete surfacing, 166 miles of asphaltic concrete retread and 100 miles of gravel surfacing.

Reconstructed Columbia River Highway, with new 312-ft. UPRR overpass, Shogren, Oregon.

OREGON — Oregon is now in the midst of translating into highway reconstruction and betterment some $72-million netted by the sale of bonds. This sum, together with federal aid and state funds currently available for construction, is financing a program under which $38-million was contracted in 1953 and $31-million will be contracted in 1954. The program will extend over a period of about five years.

Expenditures on the program amounted to $34-million in 1953 and are expected to total $42-million in 1954. Work will be in progress in 1954 on 140 miles of access controlled "expressway" construction on Highway US 99.

PENNSYLVANIA — For the calendar year 1953 the department of highways completed the construction, reconstruction, resurfacing, widening and stabilization of 2,650 miles of road at an estimated cost of $132½-million.

For 1954 we estimate the improvement of 2,300 miles, at an estimated cost of $135-million.

TEXAS — It is estimated that we will spend $111½-million for construction next year. This past year we spent $105-million for new construction.

An additional $28½-million will be spent for regular maintenance and an additional estimated $9-million will be spent on special maintenance projects in repairing damage caused as a result of floods, freezes, winds and the like.

Our total disbursement in 1953 was $159,615,000. However, we need slightly over $1½-billion to modernize our highway system. We have some 600 miles of four-lane divided highways and to accommodate today's traffic we need an additional 3,000 miles.

UTAH — The approved 1954 highway program calls for over $8-million, and a suggested federal aid secondary program will run better than $2½-million.

The 3-mile Colorado River Bridge and approaches in Grand County heads the list of projects, at a cost of $1.1-million for its plant mix bituminous surface and steel and concrete structure. Thirteen other state projects will cover 41.4 miles and cost $2,082,000.

Federal aid state work includes $3,825,000 for 45 miles of primary roads, $550,000 for 1.8 miles of urban roads, $350,000 for 4.5-miles of interstate highway, and $170,000 for 4.5 miles of flood control.

Major item in the federal aid state program is the widening to four lanes of the Salt Lake Airport-Saltair Junction, and the resurfacing of its 10.2 miles, with five bridges included in the project.

The state's secondary road program, with federal aid funds, will run about $2½-million, covering more than 105-miles of highway and including some concrete bridges.

VIRGINIA — Approximately $40-million worth of construction was put under way during the fiscal 1952-1953 consisting of the following:

Primary System	Mileage
Reinforced Cement Concrete Pavement	13.642
Plain Cement Concrete Pavement	15.548
Bituminous Concrete (Base & Surface)	18.252
Water Bound Macadam, Bit. Surface	20.706
Stab. Base, Bit. Sur. Treatment	21.963
Stab. Local Material, Bit. Sur. Treatment	343
Total Miles	99.524
Gutter & Sidewalk	2.934
Cement Concrete Curb	
Bridges let to contract over 20'	25
Secondary System	
Soil Cement, Bit. Sur. Treated	43.077
Stab. Base, Bit. Sur. Treated	161.418
Local Material	3.605
Grade and Drain	12.280
Bituminous Surface Treatment	30.560
Total Miles	251.100
Curb, Gutter and Incidentals	1.876

Our estimated revenue for the fiscal 1953-1954 will be approximately $32-million, a slight increase. Among the larger projects are the Lexington by-pass, the Lynchburg distribution road, Separation of Grades US 11, and Jefferson Street in Roanoke.

WASHINGTON — Construction for the year ending March 1953 totaled $37,787,204; for maintenance $8,482,979 and for administration $1,286,035. This is four times 1941's budget. Preliminary estimates for the year ending March 1954, indicate that expenditures for construction will total $44-million, for maintenance $10-million and for administration $1¼-million.

Close to $44-million in highway construction contracts were awarded in calendar year 1953, compared with $33-million in 1952, $26-million in 1951 and $6-million in 1940. Estimates indicate that awards during calendar year 1954 will exceed $46-million.

A large scale improvement program will result in four-laning US 99 from Vancouver through Olympia for about 120 miles and from Everett about 9 miles north to Stimson Crossing; from Conway Junction to Burlington about 9 miles and from Bellingham to Ferndale about 7 miles.

One of the fastest developing rural areas in the state is the Columbia Basin, site of one of the nation's largest reclamation projects. The 1953 legislature allocated $3-million out of its bond issue for roads in this part of the state. This money, together with federal aid and regular funds, will allow most of the construction work to be done within the next two years. Present funds will make it possible to build from Ephrata on the north to Odessa on the south and from Odessa to Vantage on the west, about 70 or 80 miles.

WISCONSIN — Construction programmed by the state highway department during 1953 totalled $48-million, a drop of $12-million from 1952. Plans for 1954 call for a tentative $45-million budget for both trunk routes and other roads.

Some 380 miles of construction are projected for 1954 on trunk routes, at a cost of about $33-million. Additional improvements for roads not in the trunk system should run about $10-million.

Milwaukee's East-West Expressway is scheduled for work totalling well over $4-million, most of it for viaducts and other structures.

Installing cribbing on Snoqualmie Pass route in Washington.

1953 Seventh Consecutive Peak Year

By WALTER E. TRAUFFER

Production, shipments, value reach new highs; prospects good for 1954

OFFICIAL figures are available only for the first 10 months of the year but these make it evident that in 1953, for the seventh consecutive year, the portland cement industry set new all-time records in both production and shipments. These figures with conservative estimates for November and December, show that production may have reached about 264,000,000 bbl., and shipments about 262,000,000 bbl. This was an increase of 6 percent in production, and 4 percent in shipments over the 1952 record totals of 249,256,154 bbl. and 251,368,503 bbl. respectively. This excellent showing was made possible by the untiring efforts of the industry to meet the growing demand for cement by getting maximum output from existing facilities and by continuing its extensive expansion program. As a result of these efforts there were in 1953 none of the serious cement shortages which had existed for the last several years.

Shipments during the first 10 months of 1953 exceeded production by about 6,000,000 bbl., bringing the stocks on hand at the end of October to 10,011,000 bbl., probably the low point of the year. This was 53 percent over the low of 6,543,000 bbl. at the same time in 1952 and far above the record low of 5,668,000 bbl. at the end of October, 1948.

During 1953 the cement industry again operated at a very high percentage of its rated capacity and may have exceeded the 1952 peak of 87.8 percent. In 1952, extensive strikes in the industry probably kept a much larger percentage of capacity from being utilized. In 1953 there were no strikes or other serious production handicaps, but the industry's capacity to produce had increased more rapidly than the demand. It is estimated that about 90 percent of capacity was utilized in 1953. Many individual companies reported the greatest volume of production and the highest capacity in their histories.

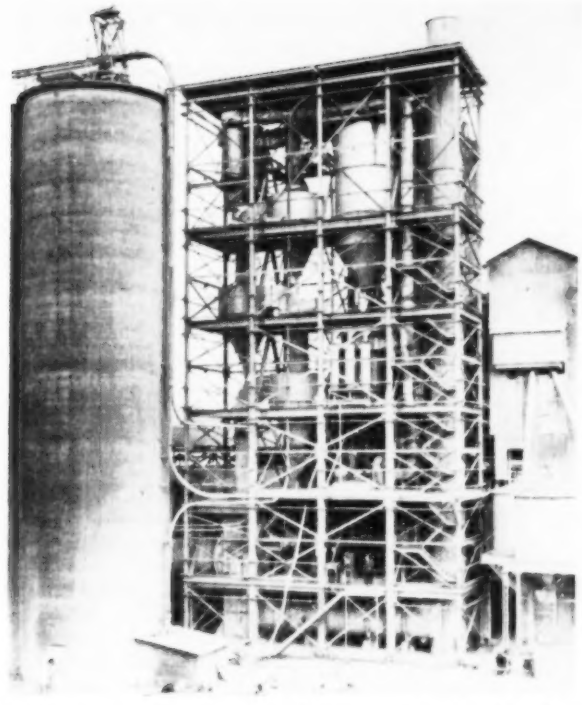
Judging from the small amount of information available on this subject there were no serious and general handicaps to production in the portland cement industry in 1953. There were few strikes and these were localized and of short duration. Car shortages were apparently less severe than in past years and no serious fuel, labor or material shortages were reported. According to reports also no serious problems are expected in 1954 in any of the above categories.

For the first time in many years also there were no serious cement shortages in 1953, indicating that the capacity of the industry to produce has, at least temporarily, caught up with the demand. A few instances of shortages were reported on the West Coast during the peak summer construction season, mostly from southern California. As to the future one California producer says:

"Going beyond 1954, our projections show that cement will be in tight supply on the West Coast for several years to come. As you know, per capita consumption of cement in the nation has been increasing steadily over a good many years. Moreover, per capita consumption of cement for the area we serve has been some 40 percent higher during the years 1948 to 1952, than in the balance of the nation. We expect this trend to continue, in view of the tremendous growth in population and economy expected for the West during the ensuing ten to fifteen years."

A year ago there was a strong feeling in the industry that much of the

A general view of Alpha Portland Cement Company's plant at Jamesville, N.Y. The stack and raw silos are at the left; the mill and storage buildings at the right. Note the storage rooms in the kiln piers.



The suspension-type preheater at the plant of the Allentown Portland Cement Co., which is connected to the 7- by 125-ft. kiln at the left.

existing prosperity was due to defense expenditures and that the end of the Korean War would cause a sharp drop in business. With the war now over and business off only slightly, however, there is more confidence in the future. Apparently the cement industry has every reason to feel confident. With construction setting a new record in dollar volume in 1953 authorities are predicting that this high level will continue for the first half of 1954.

Until recently the cement industry as a whole was operating at the highest break-even point in its history and was in a position where even a moderate drop in demand from exisiting peak levels would be disastrous. This situation has changed somewhat since the ending of price control early in the year, and the vast sums which have been spent on modernizing plants are now apparently beginning to pay off. Some producers answering our questionnaire feel that they are now in a position where they could operate profitably at reduced production rates.

Again it is impossible to make any accurate forecast on the demand for cement in 1954, but answers to a questionnaire sent to every producing company indicate the belief in the industry that the 1953 peak levels may be equalled or even exceeded. The most pessimistic estimate, from a large company operating in a wide area, predicted a drop in cement shipments of from 5 to 10 percent in 1954. Some, especially in areas where toll highways are being built, expect to set new records. Only in northern California, however, is demand expected to exceed supply, and there only during the peak season of construction. Almost without exception producers replying feel confidence in the long-range future of the cement industry and believe that further expansion of productive capacity will be necessary.

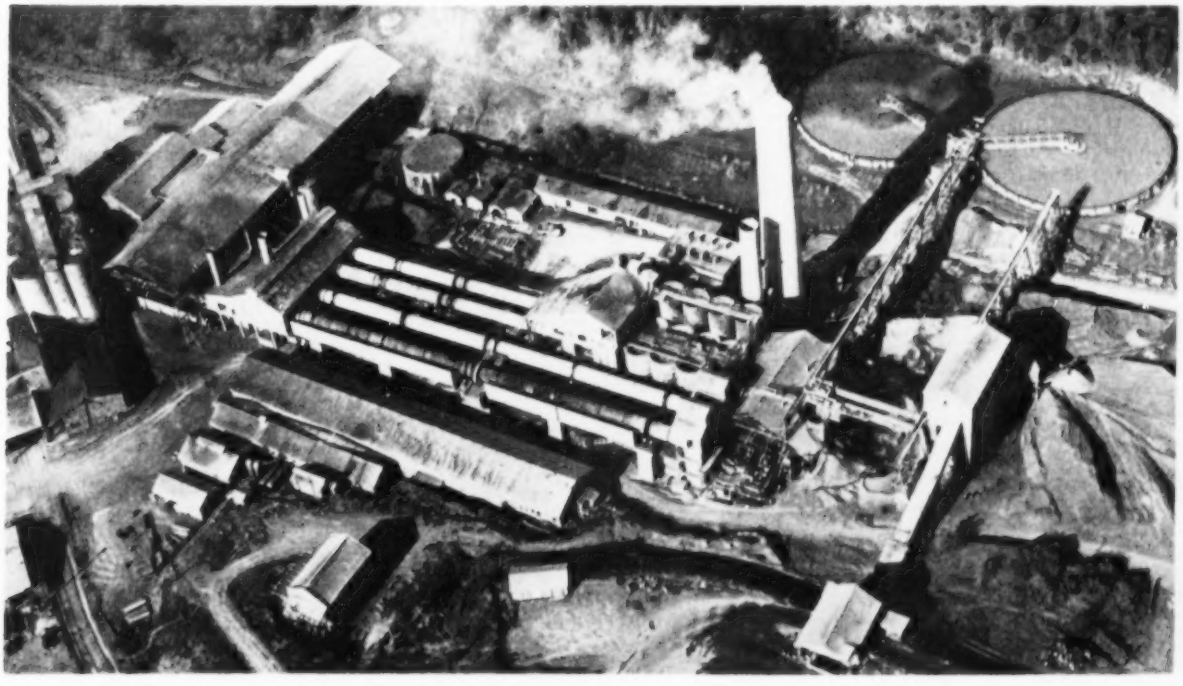
There is a general feeling in the industry, however, that the time has come for more active selling of portland cement, especially in selling concrete against other types of construction.

CONDITIONS

Much of the information we have on conditions in the cement industry in 1953 and on prospects for 1954 comes from answers to a questionnaire sent to each producing company. Quotations from some of these letters follow. On this subject a California producer says:

"Conditions in the cement industry in this area have been quite favor-

A recent aerial view of the Calaveras Cement Company's plant at San Andreas, Calif., which is published here for the first time. An extensive modernization program is planned for 1954.



able. With less than three weeks remaining until the end of the year, we can say with certainty that 1953 has been a banner year for this company and for the other California cement producers. During the first nine months of 1953, cement shipments in northern California were 14 percent ahead of last year, compared to a 5 percent increase for the entire United States. Shipments from cement mills in the northern half of the state should total slightly more than 15,000,000 barrels for 1953 - a new all-time record.

"Our surveys of the construction industry outlook for this area indicate a fairly good year in 1954. Next year should see a noticeable curtailment in federal construction, a slight drop in home and industrial building, a moderate increase in expenditures for school and commercial projects, and a very substantial gain in road building. The California State Highway Commission has recently adopted a record budget of $205,000,000 for the next fiscal year, which represents an all-time high for California and is the largest budget for any state in the nation. The unprecedented length of the building boom and the filling of much of the deferred demand for housing, etc., lends uncertainty to the future, but on the whole cement demand should be reasonably steady in 1954."

Another California producer says:

"The temporary condition of an abnormal demand for cement which existed during 1953 is now a thing of the past. As you know, Los Angeles had only four inches of rain from January 1, 1953, to date. The inevitable result was an extremely long construction season accompanied by an abnormal boom in housing. On the other side of ledger, a plant shutdown for major overhaul and the earthquake curtailed production. However, housing in this area is expected to decline by more than is now forecast for the nation as a whole. A drop in military awards is also anticipated. These, coupled with the expansion of capacity among Southern California plants which will become fully effective in 1954, should result in a surplus of cement in the area.

"A satisfactory volume of construction is anticipated for 1954.

"Despite over-production in the area which will probably exist for several years, the Company looks forward to the long-time future of this growing area with confidence."

Still another California producer says:

"Our cement production and sales have been at capacity during 1953, and we expect this situation to continue for during the year 1954.

"We do expect a small reduction in cement demand from some sources, but these should be offset by higher demand from other users. For example, cement requirements for housing probably will be down slightly, but cement usage under the expanded California State Highway program will be up. On a geographic basis, we are forecasting some shifts in demand - our Oregon sales will be much higher than during 1953 with Washington down slightly. The net effect, if anything, will be for somewhat greater demand than we experienced during 1953 throughout our normal marketing area.

A producer in the Pacific Northwest says:

Our portland cement shipment volume for 1953 will about equal 1952's performance. The prospects for 1954 are still somewhat hazy although appear quite favorable in the light of a steadily increasing population growth and an expanding industrial community."

Still another northwestern producer says:

"As to conditions in the cement industry in this area, it is our opinion that conditions will continue to be very good in 1954. The population has been increasing rapidly on the Pacific Coast and this has had a very stimulating effect on all types of building. There may be a slight reduction of building volume from 1953 but it is not anticipated that this reduction will be of more than a few percentage points."

A producer operating plants throughout the West says:

"It is our belief that there may be a slight downturn during 1954 which could run well into 1955. We believe equally strongly that in the long run there is a tremendous backlog of needed construction which will be done, and that the future of the cement industry over the long range is good."

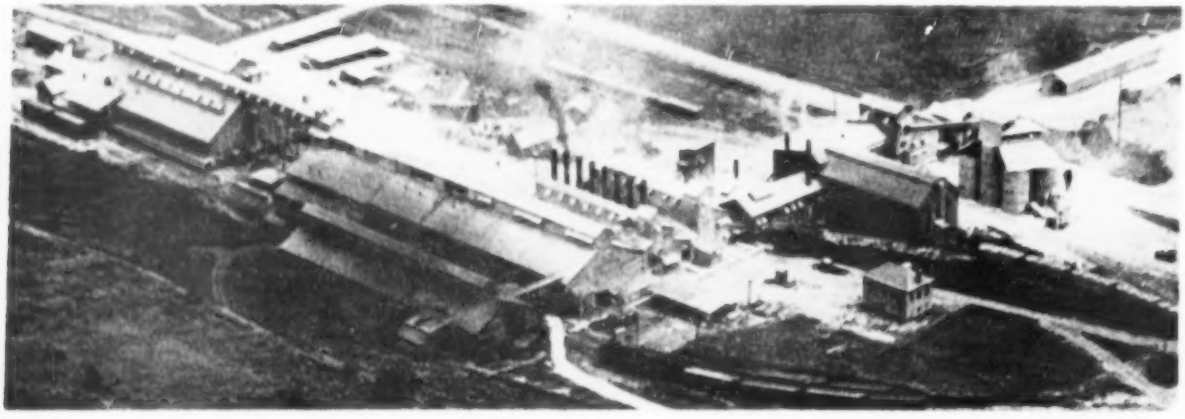
A producer operating plants throughout the greater part of the country says:

"Shipments by the cement industry will once again set a new record in 1953. The total will undoubtedly exceed 260 million barrels compared with 251 million barrels in 1952. This will be the ninth consecutive year in which shipments have exceeded the previous year, and the seventh consecutive year in which new shipping records have been achieved.

"It is obvious that the industry cannot keep on breaking records indefinitely. It is also true that in absence of an economic depression, and if international conditions do not deteriorate into a hot war, the average level of cement shipments in the future will be substantially higher than they were in the past.

"Our increasing population has had a great deal to do with the increased consumption of cement; so have the expanded and new uses of cement. Portland cement concrete is a necessity to our modern living. It has contributed much to the transformation of our country and will

The plant of the Southern States Portland Cement Company at Rockmart, Ga., purchased recently by the Marquette Cement Manufacturing Company. Plans for increasing the capacity of this plant have been announced.



continue to make its contribution.

"Manufacturing capacity has kept pace with demand and probably the most important trend in 1953 was a return to a buyers' market in several sections of the country. This means that we have a selling job to do and in the year ahead the progress of our company will depend to a great extent upon our ability as salesmen."

Another large producer with widespread operations says:

"Shipments to date for the industry in general have been maintained at a rate somewhat in excess of that for the year 1952—the increase being fairly well distributed throughout the entire country."

"We anticipate stable conditions in the cement industry in 1954 with no substantial decrease in shipments although it is probable there will be some slackening in the demand in some of the territories which we serve."

A large eastern operator says:

"We feel that the conditions in the cement business are excellent and while there may not be quite the volume of shipments in 1954 that there is in 1953, we are optimists on the industry as a whole and the future of the cement industry. We believe that in the next 15 or 20 years we will see an increase in the consumption of cement and the use of concrete all over the United States. The highway program in various states, as you know, is 25 or 30 years behind schedule and the tremendous increase in automobiles without a like improvement in highways creates a rather bad condition. There were some shortages of cement in various sections of the country during 1953 but we feel that the industry will be able to take care of requirements for 1954."

A large middle-western producer says:

"The future, so far as can be seen, is secure. Concrete is still the best material for use in its principal markets—paving, structural, conservation, housing, concrete products, and farm construction. There is no substitute as good as concrete in many uses covered by these titles.

"Where there is competition, the outstanding advantages of concrete are ably presented by P.C.A. Our Association, also, continues to find new uses for concrete and improved methods for all types of concrete construction. The research which has been started excites the imagination of those familiar with it. But, more important, what remains to be done is limited only by the drive back of our industry."

A producer in the north central area says:

"We concern ourselves primarily with the territory in which we offer our products for sale and in that area, there has been a continuous shortage of cement during the late summer and fall for the past six years. We would not be surprised to find this condition holding over through 1954 and even with our increased production. . . . We do, however, expect that the softening that has occurred in other sections of the country will extend to the Great Lakes area by 1955."

Another producer in this area says:

"In spite of many predictions of softer markets in the coming year, the feeling here seems to be that the construction market in the area served by . . . will not be appreciably weakened during 1954. As a matter of fact the opinion in some quarters is that our volume next year will exceed, slightly, that for 1953. Others predict a drop-off in the neighborhood of 2-3 percent."

A producer in the East Central area says:

"While the ready-mix business has been off all summer and fall . . . yet our dealer and block plant business has been extremely good. This applies also to the dealers in the smaller towns in which we ship our materials.

"There have been very few state highway contracts let in western Pennsylvania during 1953 as compared to the eastern part of the state. We do not anticipate too many road contracts to be let this fall or winter where they will use any large amount of cement for next year. However, there are a great many smaller contracts for schools, apartments, buildings, etc. which are being brought out almost monthly.

"With regard to 1954, we again expect a banner year. The West Virginia Turnpike expects to pour approximately 900,000 barrels of cement between April and October. While it is too far for us to ship on this project due to price, yet we will probably receive orders from the northern part of the state both for general construction and highway work. This is due to the fact that the plants supplying the vicinity of the Turnpike will be pretty well tied up with orders.

"The same situation also applies to the Ohio Turnpike. I understand that the Thruway in New York State will have most of the concrete poured at the western end by the end of this year. This would relieve the shortage somewhat for next year in that section. Partly due to the demand for cement on this project, we have shipped a fair amount of cement into western New York, Cleveland and on up into Detroit; also, a small amount into Canada."

Another East Central producer says:

"In our particular area we expect shipments of cement to continue or be better than their present high level through 1954.

"We anticipate our volume of business to be practically the same in 1954 as it was in 1953. This does not account for the increased production anticipated from improvements. However, we are confident that we will be able to ship the increased amount from such improvements.

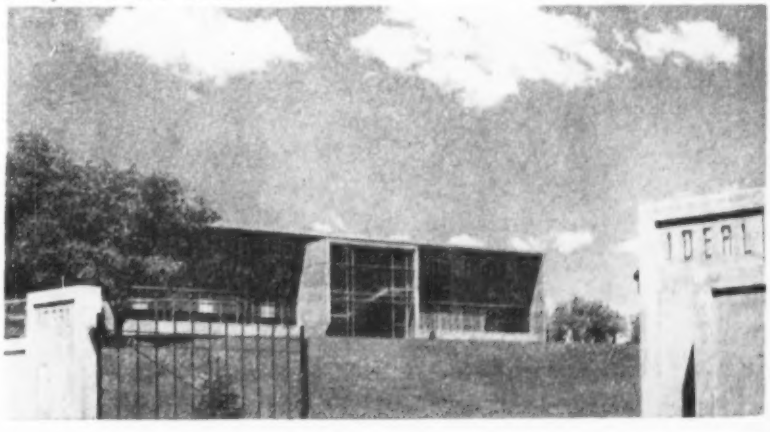
"We do not make any shipments direct to housing projects and without making an extensive survey we would be unable to determine the amount of our cement furnished to this type of work by our dealers.

63 percent of our total shipments were made to ready mix plants.

7 percent of our shipments were made direct to public works projects.

4 percent of our shipments were

Ideal Cement Company's new research center near Boettcher, Colo., provides an ideal setting for effective research work.



made direct to highway projects.

"In 1954 we anticipate public works shipments to be down 5 percent and highway shipments increased to 10 percent.

"A considerable amount of cement we ship goes to public works and highway projects through ready mix concrete suppliers and retail dealers where once again it is impossible to estimate these amounts without making a very detailed survey."

A producer in the Northeast says:

"As to the year 1954, we do not expect much slackening in our business as compared to 1953. The distribution of our products in 1953 were approximately 20 percent for housing, 39 percent for Ready Mixed Concrete, 13 percent for Public Works and 28 percent for Highways. As near as we can forecast at the present time the percentage will not vary to any great degree in 1954."

An eastern Pennsylvania producer says:

"The year 1953 has been a good one for our company in that we were able to run our plants throughout the year at full capacity. In fact, it would have been possible for us to have sold a good deal more cement than we did had it been possible for us to produce it.

"We expect business to be good in 1954. However, we do anticipate the need for a somewhat more intensified selling effort."

PRICING POLICIES

In answer to our questionnaire many producers expressed their opinions on pricing policies. Quotations from some of these letters follow:

A large producer with plants throughout the country says:

"The apparent change in the Government's attitude on pricing is, of course, gratifying. We are still of the opinion that the law should be made crystal clear by an act of the Congress.

"Nevertheless, we have already found it necessary to some extent to meet in good faith the established lower delivered prices of competitors and will undoubtedly continue to do so to a limited extent in 1954. The large increases in freight rates since 1946 have sharply reduced our shipping radii. In other words, the same amount of freight absorption per barrel now as was absorbed prior to 1946 will extend the shipping range only about half as far."

Another large company operating mainly east of the Mississippi River says:

"The government's attitude on pricing of cement had nothing to do with our policy in the matter of pricing because we have always contended that we had the right to meet an equally low price of a competitor."

A large Midwestern producer says:

"As long as we can continue to sell our product without freight absorption, we will do so. When and if it becomes necessary to absorb freight to become competitive, we will do so."

Another producer in the same general area says:

"It is not anticipated that the changed government attitude on pricing will materially affect our current operations. . . . . has been competitive at all points of distribution during 1953. In view of the feeling that our present market will again absorb our entire production, there seems to be little likelihood that . . . . will attempt to materially expand its market area during the coming year. What other producers in the industry may do is, of course, a matter of conjecture, and undoubtedly will depend primarily on their individual circumstances."

Still another says:

"I feel the present administration's attitude toward orderly marketing indicates much greater wisdom than its predecessor's and hope that helpful changes in the applicable laws will be enacted soon. This is very important, because portland cement is so highly standardized, and is purchased in such large quantities, that ability to freely compete is most important.

A producer in the eastern area says:

"We have lost some markets in the past by adhering strictly to an F.O.B. Plant Price Policy, but of course did not lose total volume because all of the product could be absorbed on an f.o.b. plant basis. We do, however, expect to absorb some transportation in order to meet competition and, in fact, have done so to a minor degree and have not placed any particular limit at this time on the practice of absorption but, of course, will have to do so as the matter develops."

Another in the same general area says:

"In our case we do not believe it will be necessary to stand any more of the cost of transportation that we have previously done."

Still another says:

"The increase in price last spring helped us considerably in trying to balance out with our increased costs in the production of cement. However, our basic costs are still on the uptrend on most of our raw materials."

And another:

"It has been, of course, gratifying to know the Federal Trade Commission has finally come to accept the law as written and as intended. Our company has, at some points, been meeting competitive prices for several years. The change in the F.T.C. attitude has been practically no effect on us, with the possible exception of some little easement in our minds."

A California producer says:

"Price protection in the industry has prevented price increases made this year from having much effect on profits; however, these profits will be realized to a greater degree as the year 1954 progresses. Competition for sales has been tightening, and we expect this trend will continue. However, we feel that we are well equipped to handle this situation.

"The change in the government's

The plant of the Superior Cement Division, New York Coal Co., which was acquired recently by the Marquette Cement Manufacturing Co. Expansion of this plant is planned.

attitude on pricing in the cement industry, we believe, will have little bearing on the method of selling cement in our marketing area. In our opinion, supply and demand are the important factors. In this connection, we believe we will not have to absorb more of the cost of transporting cement next year; though, we will, of course, maintain our pattern of market distribution."

A producer in the Pacific Northwest says:

"The removal of price controls, which took place early in the year 1953, has had a very beneficial effect upon the cement industry. With costs advancing rapidly, the margin on cement had almost disappeared under the rigid price control. Price increases which have been put into effect by the industry have been very modest but have partially offset the drastic increases in cost which have been experienced."

PROFITS, VALUE, AND COSTS

The incomplete information now available indicates that the cement industry in general made a better profit showing than in 1952. Value of sales and profits were both up but profits also formed a larger percentage of income. The increase shown is moderate as most figures are for the first 3 months of 1953, before the removal of price controls caused a widespread increase in prices. When the final figures for the year are in value of sales and profits should both show substantial gains.

Information on 1952 is much more complete. The dollar volume of sales was up about 10 percent and net profits about 7½ percent as compared to 1951. Actually net profits were only 12 percent of sales in both years.

The final government figures show that the value of the 251,368,503 bbl. of cement shipped from mills in 1952 was $638,512,228 or $2.54 per bbl. at the plant. This was an increase of 4.2 percent in volume and 4.2 percent in value as there was no increase in price over 1951, when shipments were 241,153,272 bbl., value was $613,170,483, and price was $2.54 per bbl.

At this time no official information is available on the net mill value of all the cement shipped in 1953, but the fact that shipments were up about 4 percent over 1952, and the general price increases throughout the industry after price controls were removed, make it certain that a new high record in value was set for the eighth consecutive year.

The price situation is well summarized by the following statement from a large producing company operating in a wide area:

"Prices for all products were increased in April of this year to compensate for higher labor costs and increases in the cost of other services rendered and in prices paid for machinery, repair parts and supplies and a somewhat higher cost for power resulting from some increase in the cost of fuel."

As a result of the price increases in the last few months since the end of price control it is probable that in 1953 the prices received for cement increased more than the cost of producing it, a rare condition in recent years. No figures are yet avail-

A beautiful scenic view of the Exshaw, Alberta, plant of the Canada Cement Company at the eastern gateway to Banff and the Canadian Rockies. A new kiln was installed in this plant in 1953.

able on the amount of price increase but it apparently was reasonable, yet enough to put the industry back on a sound footing.

CAPACITY INCREASE

The cement industry in the United States and its possessions in 1953 again increased its capacity considerably, but probably less than in 1950, 1951 and 1952. No new plants went into operation, compared to three in 1952, three in 1951, four in 1950, one in 1949, two in 1948, and one in 1947—a total of 14 since the end of the war. However, at least 20 plants completed major expansion programs which added considerably to their capacity, in addition to the dozens of others which made less extensive improvements, some of which also added to capacity. As usual complete information is not available but we estimate that the actual amount of new capacity installed in 1953 must have been at least 3,000,000 bbl. annually. Most of this probably replaced old capacity removed or shut down but, judging from past experience and available facts, there must have been at least 1,000,000 bbls. of actual capacity increase.

In our review of 1952 published a year ago we estimated that plant additions in that year totalled about 10,000,000 bbl. of annual capacity. According to a recent Bureau of Mines report the estimated annual capacity of the portland cement industry at the end of 1952 was 284,014,416 bbl., compared to 281,532,328 bbl. at the end of 1951. This was an actual increase of 2,482,088 bbl. or 0.9 percent.

Altogether in 1953, according to our information, there were six new kilns installed, of which two are known to have replaced old kilns that have been or will be dismantled. Much other equipment was also installed, including many grinding mills, of which only a few are known to be replacements. Many of these mills were installed independently of kilns and actually increased capacity by eliminating bottlenecks.

No complete existing plants are known to have been taken out of operation in 1953, except the old dry process plant of the Ideal Cement Co. at Portland, Colo., where a new wet process plant was built in 1948. Several other plants in 1952 and 1953 replaced old kilns but are keeping them in standby condition. Early in the year the Cowell Cement Co. plant at Cowell, Calif., which had not operated in several years, was auctioned off piece by piece when no purchaser for the entire property could be found.

In 1952 the percentage of capacity utilized was 87.8, compared with 87.4 in 1951. It is estimated that at the end of 1953 the capacity of the industry was about 285,000,000 bbl. and that about 91 percent of capacity was utilized.

Official figures on the capacity of the cement industry are as follows:

End of 1948	254,272,378 bbl.
End of 1949	258,948,399 "
End of 1950	259,448,000 "
End of 1951	281,873,000 "
End of 1952	284,014,416 "

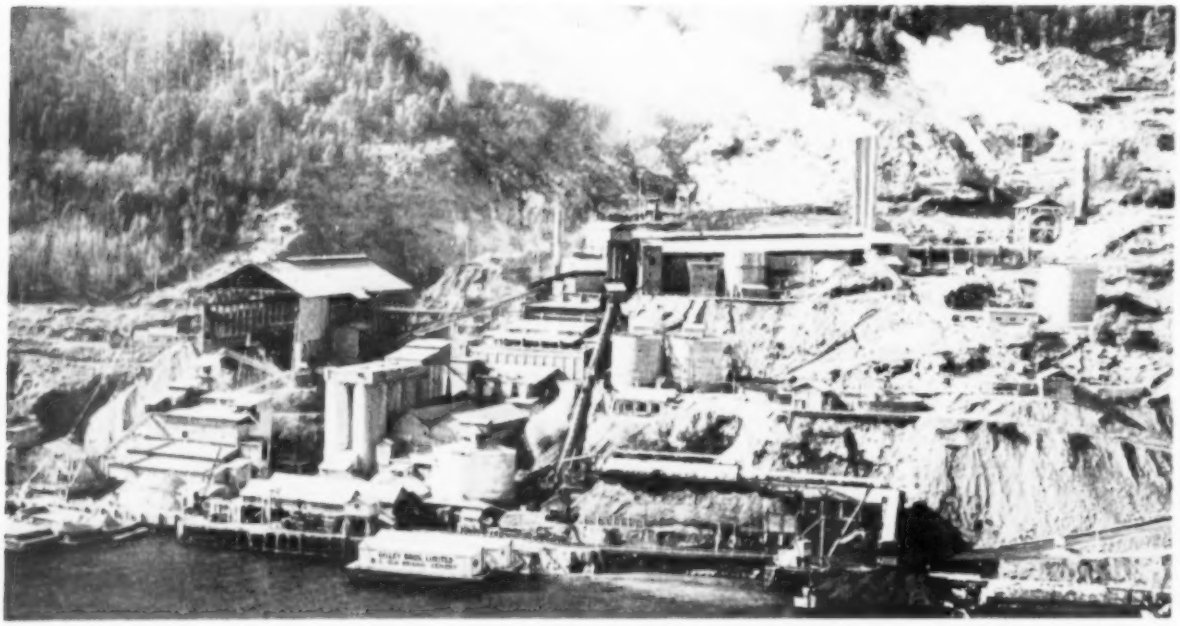
The Bamberton, B.C., plant of the British Columbia Cement Company, where a $2,000,000 expansion program was brought to completion recently. The new kiln, mill, and storage facilities added are shown.

FUTURE INCREASE

As always the information available on the amount of work under way is incomplete and it is also uncertain just how much of the known work was completed in 1953 and how much will be completed in 1954. There are known to be two new plants under construction—that of the Missouri Portland Cement Co. at Sugar Creek, Mo., and that of the Southern Cement Company at Roberta, Ala. The former is a 1-kiln operation with a capacity of 1,200,000 bbls. annually and will be in operation soon. Reports are that the old 1,000,000-bbl. dry process plant at this location will be dismantled. The Southern plant is an entirely new operation which will have a capacity of 1,000,000 bbl. annually and is expected to be in operation by mid-1954. The Pecos Valley Portland Cement Co. was incorporated to build a 2500-bbl. wet process cement plant near Pecos, Texas, and the contract for machinery has been awarded.

There are the usual rumors about new plants to be built in various parts of the country and some of these may develop for 1955 or later. The most promising of these are in Texas, California, and Virginia. The old Dominion Cement Co., Pennington Gap, Va., was incorporated early in 1953 and a D.P.A. Certificate of Necessity was said to have been issued for the purchase of the steel necessary for the construction of a 2,000-bbl. plant at that location. Proposed new plants are still in the news for South Carolina, North Carolina, North Dakota, Oregon, Minnesota, and Oklahoma.

A large amount of plant improve-



ment and expansion is now under way or definitely planned for completion in 1954 or later. Our information is necessarily incomplete at this early date but it shows that at least 18 plants have such programs under way or definitely planned. Several other companies report major programs in preparation for announcement at a later date. In addition there are dozens of minor programs under way or definitely planned.

These plants, with the new plants listed above, will install at least 14 new kilns and a large amount of other equipment. The capacity added will be over 11,000,000 bbls. of which at least 3,000,000 bbl. will be new capacity.

CHANGES IN OWNERSHIP

Again in 1953 there were few changes in ownership of cement plants or companies in the United States and its possessions although several deals are reported to be under discussion. Just a few days before this issue went to press it was announced that the Marquette Cement Manufacturing Company has purchased outright, effective January 1, 1954, the Superior Cement Division of the New York Coal Company, which includes the plant at Superior, Ohio, and the Southern States Portland Cement Co., with its plant at Rockmart, Ga.

Both the Superior and Southern States companies will continue in business, differing only in new incorporation as wholly-owned sales subsidiaries of Marquette. They will continue to operate under their original policies, brand names and with essentially the same personnel. The plants of each company will, however, be operated by Marquette, oldest cement manufacturing concern in the Mississippi Valley and recognized as one of the most progressive and rapidly growing companies in the cement industry. These acquisitions will increase Marquette's annual cement producing capacity by approximately 2,000,000 barrels, equally divided between the two plants, and expand its marketing area to include the industrially rich and growing Ohio and Kanawha River Valleys (Ohio, West Virginia, and Kentucky) and all of the state of Georgia.

TRUCK SHIPMENTS

The trend toward truck shipment of cement is continuing according to reports from producers in all parts of the country. While this is still not a general trend it seems to be spreading, especially in the Middlewest. Producers there and in the East feel that this trend will continue. Only on the West Coast, especially in California, where truck shipments have predominated for many years, do producers feel that present conditions may remain static. One producer reported an increase in rail shipments.

According to one large company with plants in many areas:

"There is some indication that the trend in the direction of truck deliveries of both packaged and bulk cement which started some years ago as a result of exorbitantly high railroad freight rates is continuing and may spread considerably within the next few years."

Another company in the eastern part of the Middle West says:

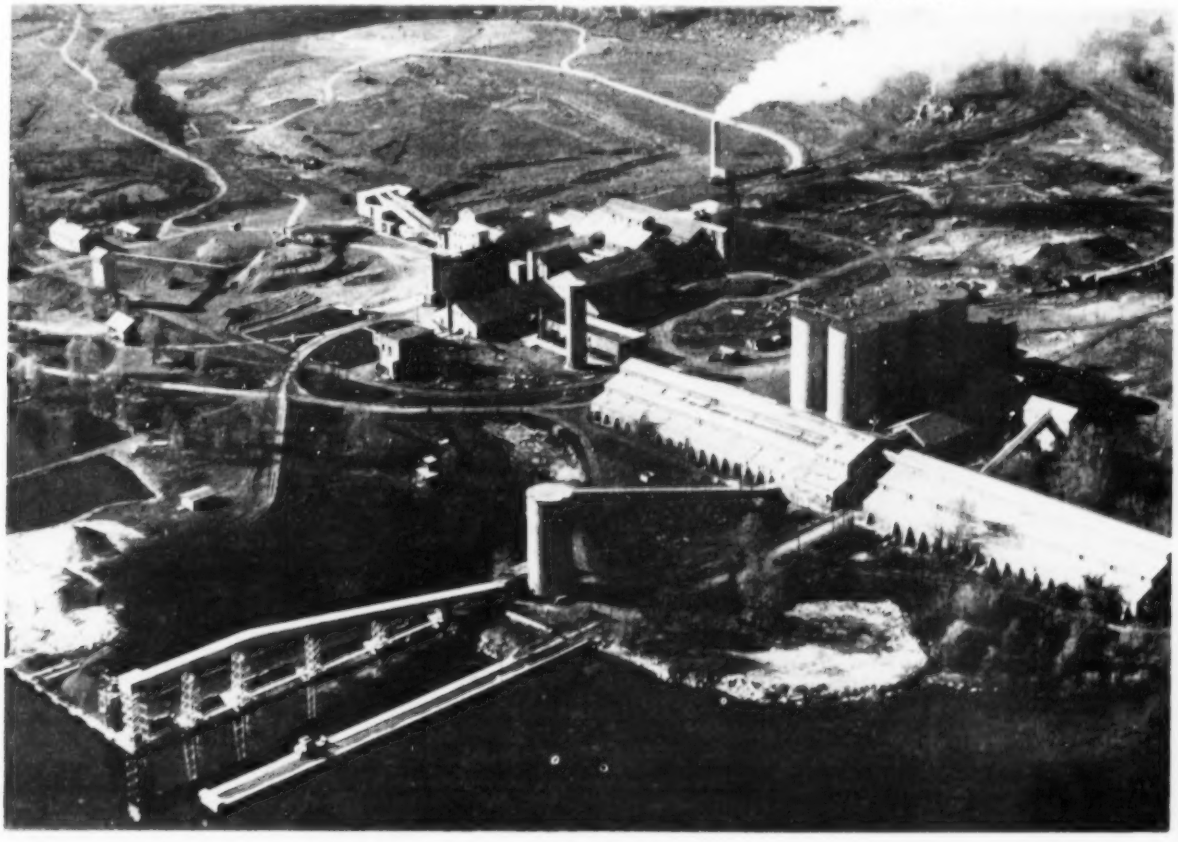
"Eight years ago approximately 10 percent of our cement to market on trucks and 90 percent on rail. In 1953 more than 90 percent will go on trucks and less than 10 percent on rail."

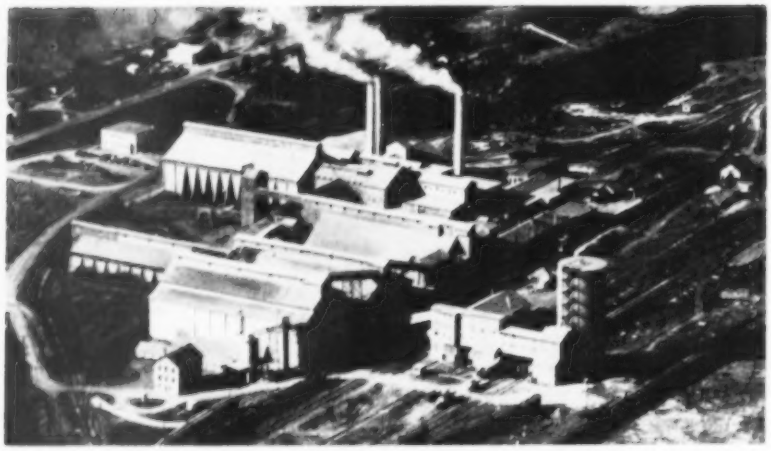
Another in this area says:

"Approximately 60 percent of our shipments are now made by trucks. Four years ago 100 percent moved by rail."

One in the northern part of the Middle West says that:

This excellent aerial view of the Belleville, Ont., plant of the Canada Cement Company shows all operations, from the quarry (background) to the dock for cement shipment and coal receipt (left foreground). A new kiln was also installed here in 1953.





The Fort Whyte, Manitoba, plant of the Canada Cement Company. An extensive expansion and improvement program now under way will double its capacity.

"Over 90 percent of our shipments are by truck and have been for years so that we do not expect any shift in that respect in the area in which we serve."

A producer in the western part of the Middle West says:

"I haven't given much consideration to trucking beyond the limits of our own marketing area. But, the question to truck or not to truck isn't difficult to answer. Where trucking is indulged economic causes justify it. There are geographical areas where highways, freight rates and markets all make trucking attractive. All of these factors change from year to year, but I doubt that anyone could say just what these changes in the future might be."

According to a northern California producer:

"There has been no increase this year in the proportion of shipments by truck; on the contrary, there has been a sizeable countertrend in the direction of higher rail shipments."

A southern California producer says:

"As was reported last year, the trend remains toward bulk shipments and trucks rather than rail shipment. A decline in new home building and some increase in maintenance and alteration programs may modify the trend toward bulk."

In 1952 the percentage of portland cement shipped in bulk increased from 61 to 63. The percentage of total shipments made by rail continued to decline and accounted for 71 percent of the total. Truck shipments formed 27 percent of the total and water shipment accounted for the remaining 2 percent.

MISCELLANEOUS

In 1952 the cement producing states (and Puerto Rico) produced 30,085,706 bbl. of portland cement more than they consumed, compared to 31,214,896 bbl. in 1951. Of this surplus 27,286,601 bbl. went to nonproducing states, Alaska, and Hawaii and 2,790,265 bbl. went to destinations outside continental United States (excluding local consumption of Puerto Rican production).

The output of all types except low-heat (Type IV), white, and portland-pozzolan was higher in 1952 than in 1951. The largest percentage gains were by sulphate-resisting (Type V), oil-well, and high-early strength (Type III) cements.

Plant Expansion

Aetna The Aetna Portland Cement Company, Bay City, Mich., is reported to have its current expansion program well under way. A clinker grinding ball mill was installed in 1953, and a new kiln and raw mill installation will be completed in 1954.

Allentown The first Humboldt Suspension Type Preheater in the United States has been in successful operation at the plant of the Allentown Portland Cement Company, at Evansville, Penna., since late May, 1953. The complete kiln assembly comprises a 7 (I.D.) by 125 ft. kiln, a 6 by 22 ft. Fuller inclined grate cooler, and a four-stage preheater.

The preheater is a multi-stage counter-flow system. Vertical ducts carry the waste gas upwardly to cyclone stage after stage. The raw material is continuously fed to and suspended in the duct leading to the uppermost or first cyclone stage, in which it is collected and discharged into the next stage. The operation is repeated until the preheated material is discharged into the kiln feed pipe, at a temperature closely approaching that of the waste gas.

It is reported that the preheater has increased production capacity of the kiln by 68 percent and the fuel requirement per barrel has been reduced 41 percent.

This preheater was designed and manufactured by Fuller Company, of Catasauqua, Pa., exclusive licensee, under U. S. patent, Numbers 2,663,-561; 2,663,560; and 2,648,532 and patents pending, for the United States, Canada, and Mexico, of Klockner - Humboldt - Dentz AG, of Cologne, Germany, which has installed four similar pre-heaters in German cement plants.

Alpha The Alpha Portland Cement Company late in 1952 put in operation a new plant at Jamesville, N. Y. (see PIT AND QUARRY, July, 1953, pp. 114-125), which considerably increased the capacity of the industry. Its capacity of 2,200 bbl. daily (800,000 bbl. annually) compares to the 1,200 bbl. daily (430,000 bbl. annually) capacity plant it replaced. The old 2-kiln dry process plant was built 40 years ago. The new one-kiln wet process plant not only has greater capacity but is much more efficient and economical in every respect. It also makes possible the production of types of cement which could not be made in the old plant.

The basic design of this plant was done by the company's engineering department. The Macdonald Engineering Company did the detailed design and had the general contract for its construction and installation of machinery. The Allis-Chalmers Mfg. Co. supplied most of the heavy equipment, including the 10-ft. 6-in. by 380-ft. kiln and the two 8- by 40-ft. grinding mills.

After the Jamesville plant was completed and in operation, several other additions were made. Four cement storage silos with self-clearing bottoms were built, the crane runway was extended for additional clinker storage, and a 4-compartment bulk loading silo was built for loading cars or trucks.

Calaveras The Calaveras Cement Company in 1952 completed a large expansion program which increased the capacity of its San Andreas, Calif., plant 1,100,000 bbl. annually to a total of 3,000,000 bbl. Except in the field of transportation only minor modernization and expansion work was done in 1953. For 1954 more than half a million dollars in capital expenditures have been budgeted, aiming at modernizing plant facilities and broadening long-range quarry development.

California The California Portland Cement Company is reported to have completed a new

The new plant of North Star Cement Limited at Corner Brook, Newfoundland, which changed hands in 1953. Expansion of these facilities is planned.

crushing department at its Colton, Calif., plant. This includes a new gyratory primary crusher with a capacity of 1500 t.p.h. Following successful pilot tests the company is said to have installed a $1,000,000 dust collecting system.

Dewey The Dewey Portland Cement Company early in 1953 completed another important step in the improvement and expansion of its plant at Davenport, Iowa. Two new 11 by 375 ft. Allis-Chalmers kilns were installed, complete with air-quenching clinker coolers and Raymond coal mills. At the same time three old 11- by 175-ft. kilns were taken out of production. These kilns were connected to a waste-heat power plant which has been abandoned. This consisted of three 1000-hp. waste-heat boilers and three 1500-kw. turbo-generators. The waste-heat power was replaced with two complete incoming power lines 69,000 and 13,200 volts. A new outdoor switching station was installed, with a 3-phase, 60 cycle, 10,000-kv.-a. transformer, and the electrical transmission system was completely redesigned and rebuilt, with 13,200-v. underground service to numerous load centers throughout the plant.

The first major expansion of this plant was completed in 1949, when the first of the present three 375-ft. kilns was installed. This kiln added 2400 bbl. to the 1500-bbl. daily capacity of the three old 175-ft. kilns. The two new 375-ft. kilns are rated at 300 bbl. daily over the three old kilns taken out of service, for a total capacity of 7200 bbl. from the three new kilns.

Also as part of this latest program, eight new cement silos were built with a capacity of 234,000 bbl. These are said to be unique in this country in that they are built over railroad tracks so that bulk cars can be loaded by gravity. With these silos the plant now has a storage capacity of over a million barrels, permitting 100 percent operation during the winter season. A second primary crushing and conveying system has been installed to serve the first level of the quarry. An additional 600 ft. of concrete dock has also been built along the Mississippi River and a third bulk cement loading system was installed there.

At the Dewey, Okla., plant a complete new outdoor substation is under construction. This will supplement power from the company's waste-heat plant and will be synchronized. A new 10- by 18-ft. Kennedy Van Saun air-swept tube mill will be in operation in 1954. Dust collectors will be installed on the rock dryers and a new coal dryer, complete with dust collectors, is being installed.

No recent information is available on the company's plans for building a barge terminal at Kansas City, Mo., and a distributing plant at St. Paul, Minn. When announced in 1952, the latter was to be a cement storage and distributing setup, or the same with a grinding department to receive clinker by barge from the Davenport plant.

Dragon The Dragon Cement Company is reported to have installed additional grinding equipment in 1953 at its Thomaston, Maine, plant at a cost of $400,000. This followed the increase in capacity in 1952 from 1,200,000 to 1,800,000 bbl. annually by the replacement of one of two smaller kilns by a new 11- by 376-ft. kiln.

At the Northampton, Pa., plant Dragon is reported to have spent over $2,000,000 on improvements in 1953. This work consisted of a complete new storage for raw materials and complete new raw and finish mill departments under one roof. New equipment includes primary and secondary crushers, five Allis-Chalmers ball mills with air separators, five 1,000-hp. motors, and new storage and blending tanks. This is part of a long-range modernization and expansion program at this plant.

Federal The Federal Portland Cement Company, Buffalo, N. Y., reports plans to continue modernization of plant, and expansion as well, wherever the need of it is apparent. The program for 1954 includes expenditures of over $400,000 for such work, some of which was begun in 1953. Included is additional electrical power installation, and a new finish mill, including the building. The slurry storage will also be enlarged by the erection of one structure for liquified clay and another for finished slurry.

General The General Portland Cement Company early in 1953 announced plans to further increase its productive capacity with a construction and improvement program for 1953-54. Expenditures of $4,000,000 in 1953 were to cover completion of additions to the Tampa, Fla., plant (Florida Portland Cement Co.), and the start of construction at the Houston, Texas (Trinity Portland Cement Co.) to increase its capacity by 1,250,000 bbl. annually by some time in 1954.

Giant The Giant Portland Cement Co., Egypt, Pa., completed the installation of a seventh kiln early in 1953. This added 200,000 bbl. annually to the capacity of the plant. There was ample raw and finish mill capacity to take care of this extra load. This installation was made by the Macdonald Engineering Company. The company has no active plans for expansion or major plant revisions during 1954.

Hercules The Hercules Cement Corporation is reported to have near completion its expansion program at Stockertown, Pa. This includes two new kilns of 1,000,000-bbl. annual capacity each.

Huron The latest step in the vast expansion program at the Alpena, Mich., plant of the Huron Portland Cement Company is expected to be completed early in 1954. Already recognized as one of the three largest cement plants in the world, this should further strengthen its claim to top honors. This latest program includes four new 10- by 153-ft. Allis-Chalmers kilns, two Bradley mills, two 9½- by 15-ft. raw mills, two 8- by 37-ft. finish mills, a scale and proportioning building, several miles of belt conveyors, waste-heat boilers, electrical dust precipitators, etc.

Huron also expanded its Detroit distributing plant in 1953 by the addition of five new silos for a total of 11. During the year another self-

unloading boat was added to the company's fleet. The "Paul H. Townsend" is a 6,000-ton ocean-going vessel converted for bulk cement handling.

Ideal The Ideal Cement Company, which since the war had carried on the most extensive expansion and improvement program in the industry, kept its capital expenditures at a comparatively low level in 1952 and 1953. No definite plans have yet been announced for 1954, but a plant rehabilitation program is under consideration which will be announced at a later date. Plants at several locations may be substantially remodeled.

On August 19, 1953, Ideal dedicated a new laboratory and research center (see PIT AND QUARRY, August, 1953, pp. 62-3) at Boettcher, Colo., at a cost of nearly half a million dollars. This project has as its primary objective the making of better products and the broadening of their usefulness. Research will extend not only into cement making, but also into specialized end uses of cement, and into related fields such as the production of lightweight concrete aggregates and other products. Earlier, Ideal had announced plans for the eventual rehabilitation of the three plants of the subsidiary Pacific Portland Cement Co. The Redwood City, Calif., plant was to be expanded at a cost of about $3,500,000 and the Gold Hill, Ore., plant at a cost of $3,000,000. No plans were announced for the plant at San Juan Bautista, Calif.

During the summer of 1953 Ideal announced the shutting down of its old plant at Portland, Colo. These facilities had been used intermittently to supplement the production of the new plant which was built there in 1949.

Lehigh The Lehigh Portland Cement Company's biggest recent contribution to the capacity of the cement industry was the new plant at Bunnell, Fla., which went into operation in December, 1952. This 1,400,000-bbl. wet process plant was designed by F. L. Smidth & Co., which also supplied most of the equipment. This $14,000,000 two-kiln operation is believed to be the first to use coquina shells as a raw material and it was found expedient to install all facilities for screening and washing the shell on a barge which could be moved along with the dragline which recovers the shell. Plant equipment includes three 10- by 15-ft. raw mills in closed circuit with Dorr bowl-rake classifiers, an 185-ft. dia. Dorr thickener, and a 7 ft.-2 in. by 36-ft. 2-compartment Unidan mill.

The two kilns are 10½ by 380-ft. Smidth units with Multiclone dust collectors ahead of the stacks, and connected to Fuller grate coolers. The three 10- by 15-ft. Smidth finish mills are in closed circuit with 16-ft. Sturtevant separators and are connected to Norblo bag-type dust collectors.

Lehigh has under consideration for the future three major projects at existing plants for probable completion within a five-year period. The first of these will be the expansion of the Alsen, N. Y., plant. There are no plans for the construction of a new plant at Monticello, Minn., this year.

Lone Star The Lone Star Cement Corporation made a big addition to the capacity of the cement industry in 1951 and 1952 when it put in operation two new cement plants at Lone Star, near Roanoke, Va., and at Maryneal in west Texas. Both these plants were far from any other existing operations and represented entirely new capacity. They were nearly identical 2-kiln dry process plants with capacities of 1,500,000 bbl. annually.

Because of the demand in the west Texas area, Lone Star announced late in 1952 that a third 11 ft. 3 in. by 10 ft. 6 in. by 340 ft. Allis-Chalmers kiln would be installed at the Maryneal plant, increasing its capacity 1,000,000 bbl. annually. Additional raw and finish mills were also installed. This kiln is now in operation. Later in the year a third 10- by 340-ft. kiln with a capacity of 700,000 bbl. annually, was also announced for the Lone Star, Va., plant and this was to be in operation by the end of 1953. To provide sufficient material for this kiln a second shovel was provided for the quarry, and another finish-grinding mill was installed. The Lone Star construction program for 1954 includes the completion of new silos at the New Orleans plant with a capacity of 100,000 bbl., the installation of additional grinding equipment and other machinery for special cements at the Dallas plant and additional dust collecting equipment at practically all plants.

Louisville The Louisville Cement Company in 1953 installed some unusual truck loading silos at its Speed, Ind., plant. The bag storage and the entire packing equipment is under the silos. This installation was built by the MacDonald Engineering Company.

Marquette The big news of the year was probably the recent announcement of the outright purchase by the Marquette Cement Manufacturing Company, effective January 1, 1954, of the Superior Cement Division of the New York Coal Company, which includes the plant at Superior, Ohio, and of Southern States Portland Cement Company, with its plant at Rockmart, Ga. The acquisition of these properties will rank Marquette among the five largest cement companies in the country.

Both the Superior and Southern States companies will continue in business, differing only in new incorporation as wholly-owned sales subsidiaries of Marquette. They will continue to operate under their original policies, brand names and with essentially the same personnel. The plants of each company will, however, be operated by Marquette. These acquisitions will increase Marquette's annual cement producing capacity by approximately 2,000,000 barrels, equally divided between the two plants, and expand its marketing area to include the Ohio and Kanawha River valleys (Ohio, West Virginia and Kentucky) and all of the state of Georgia.

The Superior plant, located 15 miles east of Portsmouth, Ohio, has been in continuous operation since 1907. It is currently producing at the rate of approximately 800,000 barrels annually. Marquette announced plans to increase annual production there by 200,000 barrels within the next year. The Southern States plant at Rockmart has been in continuous operation since 1902. Now, under Marquette, annual production there will be increased from the current 300,000 barrels to approximately 1,000,000 barrels.

Both the Ohio and Georgia plants will be immediately and substantially improved in a $3,580,000 modernization program authorized by Marquette's board of directors at the time of purchase.

It is reported that the Marquette Cement Manufacturing Company in 1953 virtually completed a $2,250,000 improvement program affecting five of its plants. At the Cape Girardeau, Mo., plant capacity was increased about 100,000 bbl. to 1,500,000 bbl. annually by the installation of equipment designed to improve rock crushing and kiln burning efficiency. Reports that a 300,000 bbl. kiln is being installed at this plant are unofficial. At the Cowan, Tenn., plant clinker producing capacity was increased at least 50,000 bbl., bringing the annual capacity up to nearly 1,000,000 bbl.

At the St. Louis, Mo., distributing plant new packing and loading facilities were provided and the old docks

were replaced with a new permanent dock and captive barge arrangement on which was installed all machinery for the transfer of bulk cement from river barges to storage silos. The same program was also completed at the Memphis, Tenn., distributing plant but four additional 10,000-bbl. storage silos were also erected.

Missouri No authoritative information is available on the progress being made on the new 1,200,000-bbl. plant of the Missouri Portland Cement Company at Sugar Creek (near Independence) Mo., but it is reported to be only a few months from completion. When plans for this plant were originally announced it was stated that the existing old plant would probably be maintained and operated but that it might eventually be replaced by a duplicate new plant. More recent information indicates that the existing old plant will be dismantled after the new plant goes into operation shortly after the first of the year.

The new Sugar Creek plant has a Smidth 11-ft. 3-in. by 350-ft. kiln, a Nordberg 10½- by 16-ft. raw mill and a 9½- by 32-ft. finish mill. The primary crushing plant has a Traylor jaw crusher and a Pennsylvania Impactor. There are eight material storage silos, each 30 by 80 ft., with cone bottoms, four for charging the raw mill and four for the finish mill. Six 32-ft.-dia. silos were also built for homogenizing the kiln feed. The Macdonald Engineering Co. has the contract for this project.

Monarch The Monarch Cement Company, Humboldt, Kans., is continuing the expansion and improvement program which has made this plant one of the outstanding operations in its area. In 1950 a $1,500,000 program was completed which included the installation of an 11- by 230-ft. dry process kiln, along with an air-quenching clinker cooler, a Babcock & Wilcox waste heat boiler, a 300-ft. stack, etc. Late in 1951 a second Allis-Chalmers kiln of the same size was added, along with an air-quenching clinker cooler, a waste-heat boiler, a coal pulverizer, dust collectors, etc.

Now under construction is a $750,000 shale crushing and drying plant which will be completed early in 1954. This, it is reported, will cut shale processing costs in half. Equipment includes trucks, crushers, a 10- by 80-ft. drier, dust collectors, etc. Other major improvements planned include a new rock crushing plant and a new 7500-kw. power plant.

In 1953 the company built a modern new office building which is not only well designed and useful but serves as a demonstration of the beauty that can be achieved through a combination of concrete, glass blocks, transite, etc. This was the latest step in a program of improving the non-operating departments of this plant. Over the last several years new shop and warehouse facilities have also been built. A feature is the warehouse for parts and supplies with an indexing system which simplifies the job of keeping up the stock and locating desired items. An unusually efficient system has also been developed for handling these parts and supplies and for making quick installations and repairs in the plant.

An interesting development in the quarry is the completion of the fill which will take the main highway south from Humboldt across the center of the quarry. This route was selected to eliminate some dangerous curves. Underpasses at several points will permit free movement of trucks in the quarry.

Monolith The Monolith Portland Cement Company was forced to shelve temporarily the expansion plans for its plant at Monolith, Calif., when it was damaged by a severe earthquake late in 1952. Repairs and rebuilding are now completed and the company is now preparing to increase burning capacity about 750,000 bbl. annually.

Northwestern States The Northwestern States Portland Cement Company, Mason City, Iowa, is reported to have begun the modernization of its kiln department. A new kiln and cooler are being installed as well as some grinding equipment.

Olympic The Olympic Portland Cement Company, Ltd., in 1953 installed a new clinker grinding department, completing the modernization program started in 1948 with the installation of a 11- by 400-ft. Smidth Unax kiln. In 1949 a new raw-grinding department was built, to which two more slurry storage basins were added in 1952. The equipment installed in 1953 included an 8-ft. 6-in. by 10-ft. 8-in. ball mill and an 8-ft. by 30-ft. tube mill, both of F. L. Smidth manufacture, in the clinker grinding department. The tube mill is in closed circuit with a 16-ft. Sturtevant separator. Many of the spiral screw conveyors were replaced with Fuller-Huron Airslides. An 8-in. Fuller-Kinyon cement pump was also installed at the dock for water shipment of bulk cement in barges.

Oregon The Oregon Portland Cement Company has an extensive quarry expansion program under way at its Lime, Oreg., plant, which will be completed in 1954. Modernization of the kiln firing system is included. This will entail an expenditure of approximately $1,000,000 and is now about 50 percent completed. This program will increase productive capacity sufficiently to take care of demands for the Snake River dams now under consideration. The plans to build a new plant at Portland have been shelved for the time being due to recent increases in the cost of machinery and installation.

Pecos The Pecos Valley Portland Cement Company, a Delaware corporation, has been formed to build a 2,500-bbl. wet-process cement plant just south of Pecos, Texas. The contract for the machinery has been awarded to the Kennedy-Van Saun Manufacturing and Engineering Corporation.

Peerless The Peerless Cement Corporation plans to continue its long-range expansion and improvement program instituted immediately following the end of World War II. During 1953 the installation was completed of a new clinker conveying system at the Port Huron, Mich., plant, designed to facilitate the loading of clinker onto barges for delivery and final grinding at the Detroit plant. A new clay washing building and clay mills were also added at Port Huron and nearly 200 ft. of the No. 1 kiln was replaced with new section. At Detroit electrical precipitators are being installed which are expected to be in operation early in 1954.

Penn-Dixie The Penn-Dixie Cement Corporation in 1953 spent about $1,250,000 for capital expenditures at its various plants. This brings to over $13,000,000 the amount spent in the last six years for improvements and expansions. At the Kingsport, Tenn., plant, which in 1951 was converted from the dry to the wet process, $700,000 was expended for a new quarry at Specs Ferry and changes in the raw storage and proportioning facilities at Kingsport. Two new 2-cu. yd. diesel shovels and a 20-ton diesel locomotive were purchased for the quarry at Clinchfield, Ga.; five Euclid trucks were added at Richard City, Tenn., and two at the Lehigh Valley plants; development of the quarry continued at Winterset, Iowa; four new Joy diesel-electric shuttle cars, making a total of six, were added at the West Winfield, Pa., limestone mine and an 8-in. Fuller-Kinyon cement transport system was installed in the plant.

It is contemplated that capital expenditures for 1954 will be well over $1,500,000, but no details are yet available.

Permanente As in the previous year Permanente Cement Company in 1953 made no important changes to its cement plant at Permanente, Calif., confining its efforts to maintenance and improvement of efficiency. The construction of another cement plant is being considered. The subsidiary Kaiser Gypsum Co. has under construction a new gypsum board and plaster plant at Seattle, Wash., and the Glacier Sand & Gravel Co., also a subsidiary, is completing an 870,000 expansion and modernization program at its Steilacoom, Wash., plant.

Pittsburgh Coke The Pittsburgh Coke & Chemical Company, Neville Island, Pa., is reported to have completed the installation of two preliminary clinker grinding mills. The capacity increase is about 300,000 bbl. annually.

Ponce A unique development of 1953 was the erection in Fort Lauderdale, Fla., of a bulk cement distributing and packing plant by Ponce Products, Inc., to help alleviate the shortage of cement in southern Florida. Cement received in a 4,600-ton boat from the plant of the Puerto Rico Cement Corp. in Puerto Rico is pumped into the 150- by 200-ft. warehouse. From the warehouse the cement is pumped to a silo for loading into special tank trucks for distribution.

Riverside The Riverside Cement Company, which in 1952 increased the capacity of its Oro Grande, Calif., plant 1,600,000 bbl. annually by the installation of two new kilns, two new mills, a clinker mill and other equipment, further improved this plant in 1953. Five Multiclones were installed on the recuperator stacks, clinker breakers were added to the five Fuller grate coolers, a Joy rotary drill replaced wagon drills, a new 12,500-c.f.m. compressor was installed, finished cement storage was increased by the erection of eight new silos of 15,000-bbl. capacity each, and new gypsum receiving and storage facilities were built. The company is particularly proud of the beautiful and modern new concrete change house at this plant which is all of precast and tilt-up construction.

Engineering has been completed on additions to the finish-grinding department which will increase its capacity by 1,000,000 bbl. annually. Engineering has been completed and foundations are being poured for a waste-heat power plant at the Oro Grande operation.

The modernization program begun in 1952 at the Crestmore, Calif., plant is also progressing. During 1953, three 20-cu. yd. Tournarockers and a Marion 1½ cu. yd. shovel were purchased as part of an expanded quarry and mining operation. The transportation fleet was augmented by six 3-axle International trucks, and four Autocar truck tractors and utility trailers. Garage and service facilities have been increased to handle the additional rolling stock.

South Dakota The South Dakota State Cement Plant, Rapid City, S. D., early in 1953 completed the construction of 12 additional 10,000-bbl. cement storage silos at a cost of $350,000. The 16 silos at this plant now have a capacity of 350,000 bbls. A complete new finish-grinding addition was also built, together with an 80-ft. wide by 71-ft. long extension on the crane storage for clinker. The finish mill has three feed hoppers for the new 8- by 12-ft. Allis-Chalmers Preliminator. The new secondary clinker mill, a 9½- by 13-ft. unit, is in closed circuit with a 16-ft. Sturtevant separator. Feeders were provided for the manufacture of oil well and mortar cements. A Fuller-Kinyon pump conveys the cement to silos. This work was done by the Macdonald Engineering Company. The crushing department is also being expanded and modernized.

Southern The Southern Cement Company, of Birmingham, Ala., which has for many years been a manufacturer of slag and masonry cements, and lime, has announced that it is entering the portland cement field with a modern new plant at Roberta, Ala. This plant will have a capacity of 1,000,000 bbl. per year and is expected to be in operation by mid-1954. This company in 1950 completed a new lime plant at Roberta, Ala., and in 1952 a second rotary kiln was added there.

Southwestern The Southwestern Cement Company is continuing the extensive expansion program at its Victorville, Calif., plant. When completed late in 1953, the capacity of this plant will be nearly 4,000,000 bbl., nearly double the potential in 1945. The addition of its sixth kiln in 1950 increased capacity to 3,000,000 bbl. and another 10½- by 330-ft. Allis-Chalmers kiln with a grate cooler, and a clinker ball mill are now being installed. In addition, a new quarry is being opened and a new crushing department built, together with storage and loading facilities. Other improvements include additional slurry storage and blending facilities, cement silos, change-house, locker rooms, etc.

Some additions are reported to have been made to the Osborn, Ohio, plant in 1953.

Spokane The Spokane Portland Cement Company made no major improvements or expansions to its plant at Irvin, Wash., in 1953. The 50 percent expansion of its plant which has been contemplated for some time is dependent on the ability of the company to obtain a Certificate of Necessity from the Office of Defense Mobilization. An application for such a Certificate has been pending since 1951.

Universal-Atlas The Universal Atlas Cement Company reports that the rebuilding of its plant at Universal, Pa., is proceeding according to schedule and that the new plant should be in operation by mid-1955. In the meantime production is continuing without interruption. This program, started in 1952, called for the replacement of three departments: raw material storage and grinding mills; kilns; clinker grinding; in that order. The first stage, now reported to be completed, consisted of the installation of a covered raw material storage served by an 80-ft. span bridge crane, three rotary driers and two raw-grinding mill units. The second stage, to be started soon, will involve completion of the crane storage and a kiln building with two new kilns. Considerable miscellaneous plant improvement work was also done at other plants in 1953. Plans are under way for 1954 work but are not yet definite.

Whitehall No official information is available on the extensive modernization program reported to be under way at the plant of the Whitehall Cement Manufacturing Company, Cementon, Pa. This program is said to affect every department of the plant and to be scheduled for completion late in 1954.

CANADA

According to official government reports, Canadian cement plants made shipments of 10,432,199 bbl. (Canadian) in the first six months of 1953. This is an increase of 18 percent over the same period a year ago. Unofficial reports indicate that the same tempo continued through the last half of the year, setting new records of production and shipments by wide margins. In 1951, shipments were a record 17,007,812 bbl. and the estimated total for 1952 was about 21,000,000 bbl. It is thought that the 1953 total may have approached 24,000,000 bbl. Much of the sales record is said to be due to major construction projects such as the Ontario Hydro Power develop-

(*Continued on page 156*)

Gains Reported in 1953 by Most Industries

By KENNETH A. GUTSCHICK

Output of sand and gravel, slag, and lightweight aggregates at all-time high; crushed stone and agricultural limestone production declines.

NO accurate production information covering the sand-and-gravel and the crushed stone industries is available later than 1951, but according to a survey of the nation's aggregate producers made by PIT AND QUARRY in the closing weeks of 1953, it appears that sand and gravel production reached a new record high in 1953, whereas crushed stone production fell off slightly from 1952, which is believed to have been a record year. These conclusions were reached by comparing the 1951, 1952, and 1953 production performances as compiled from our questionnaires with the latest known production data reported by the Bureau of Mines (1951). Based upon the same information, it appears that 1954 aggregate production will closely approximate that of 1953.

Based upon the survey conducted this year, it appears that sand and gravel production gained 5 percent in 1952 over 1951, thereby reaching 420,000,000 tons, and gained an additional 3 percent in 1953, reaching 433,000,000 tons. Each year represents a record high. Compared to the last known production (approximately 402,000,000 tons—1951) the current annual production represents an 8 percent gain over 1951.

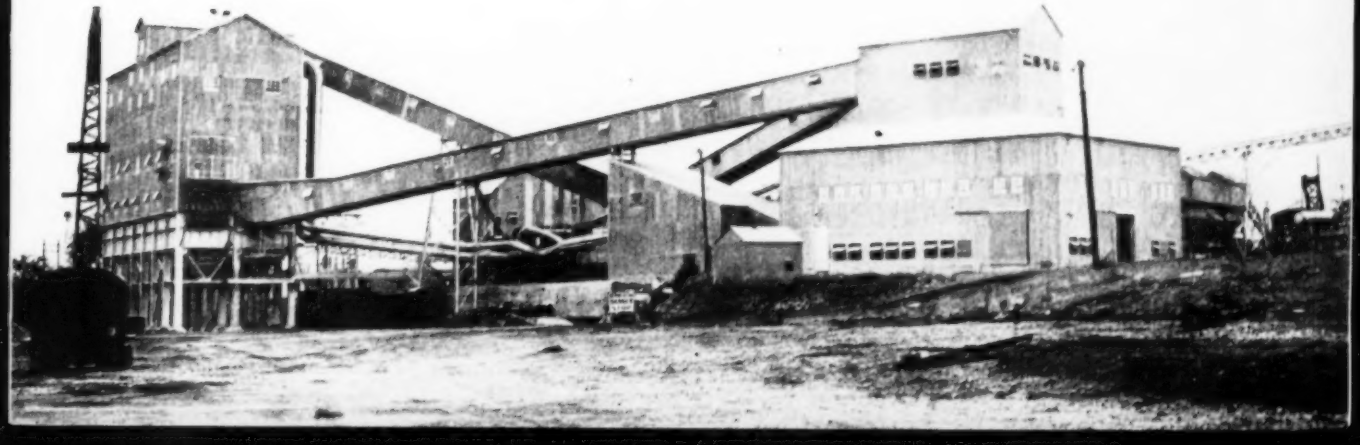
The crushed stone picture is somewhat different, according to the survey. In 1952 the indication was that crushed stone production gained 4 percent over 1951, reaching 298,000,000 tons, but slumped off 2 percent in 1953 to 292,000,000 tons. Thus 1952 represented an all-time record year for crushed stone, while 1953 was the second-highest year, exceeding the 1951 peak of 286,000,000 tons by about 2 percent. (See accompanying graphs.)

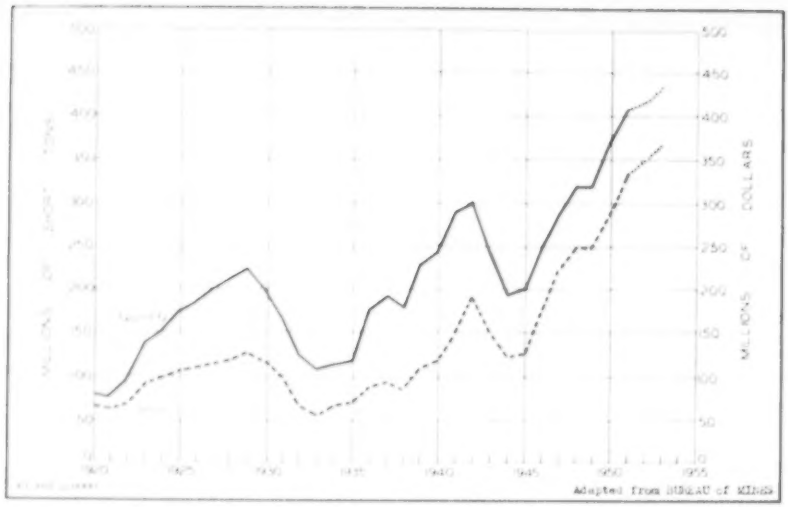
A geographic breakdown of the survey data indicates that sand and gravel producers in all sections showed gains in 1952 over 1951, ranging from 1 percent in the West to 10 percent in the South. However, comparing 1953 with 1952, substantial gains were reported in the West (25 percent) and the East (15 percent), while the Midwest gained only 2 percent, and the South dropped 2 percent.

Changes in crushed stone production were mixed. Western producers indicated a 9 percent decline in 1952 over 1951, while the other sections showed gains ranging from 2 percent in the South to 11 percent in the Midwest. In 1953 both the Midwest and the South showed losses (8 and 4 percent, respectively) over 1952, while the East showed a minor gain of 1 percent and the West 20 percent. Summing up, it appears that in 1953 substantial gains for both industries were reported in the West, moderate gains in the East, and slight losses in the South. In the Midwest crushed stone production dropped moderately, while sand and gravel production increased slightly. This geographic analysis is included here as an indication of general business trends in the aggregate industries. Because the total samples obtained were relatively small productionwise (10 percent for the crushed stone industry and 5 percent for the sand and gravel industry), these conclusions cannot be considered to be more than indications.

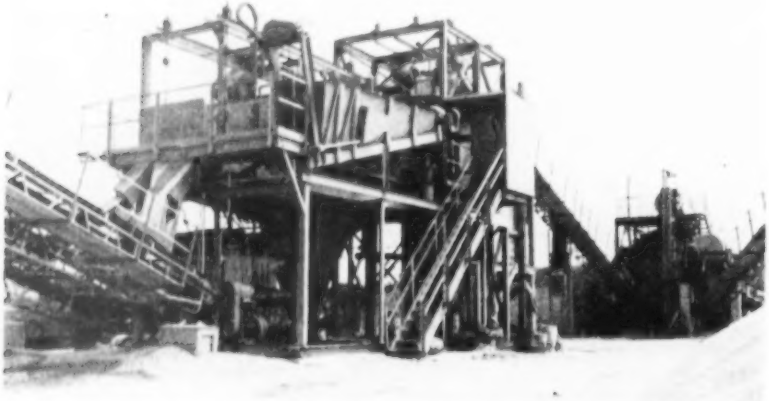
In 1951, according to the Bureau of Mines, both industries broke the record production attained the previous year. Sand and gravel production, including both commercial and non-commercial operations, increased 9 percent over 1950—from 370,455,000 tons to a peak of 401,620,000

A general view of the Dolese Bros. new 750-t.p.h. crushed stone plant located at Richards Spur, Okla., with the screening and blending building at the left. At the right is the secondary crushing building. The primary crusher building and the dust collectors are in the center background. This plant is one of the most modern crushed stone plants in the U. S.

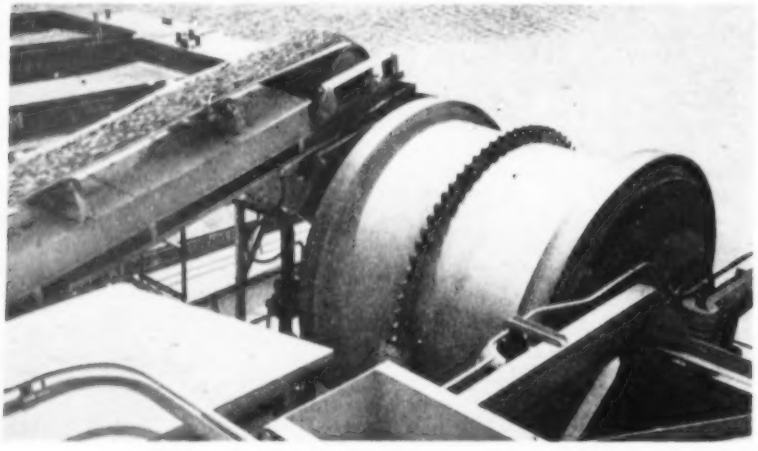




Production of sand and gravel in the United States, 1920-1953. (Includes both commercial and non-commercial operations). Note: 1920-1951 data is adapted from a similar graph appearing in the latest Bureau of Mines "Minerals Yearbook", while 1952 and 1953 figures represent estimates made by Pit and Quarry based on our year-end questionnaire survey. The graph shows sand and gravel output to be at an all-time high.



A relatively new development in the sand and gravel industry has been the use of heavy media separation to remove deleterious materials (chert, shale, and other soft materials) from gravel deposits, thereby rendering them suitable for concrete aggregates. Shown here are two pioneering H.M.S. installations in the industry, including (above) the Owatonna Aggregates Corporation plant at Medford, Minn., and (below) the Dravo Corporation, Pittsburgh, which has the H.M.S. facilities installed on one of its dredges. The lower view shows untreated gravel from the Dravo dredge being fed into an 8- by 8-ft. drum, where the gravity separation takes place.



tons, the value likewise increased from $295,040,000 to $333,465,000, or a gain of 13 percent.

Crushed stone production in 1951 (also including both commercial and non-commercial operations) jumped 14 percent from 252,113,030 tons to 286,342,509 tons, while value increased 12 percent from $390,582,097 to $437,783,994. In terms of production by kinds, gravel comprised 62 percent of the 1951 total sand and gravel production, while the total crushed stone production included limestone—72 percent, basalt and trap rock—10 percent, granite—7 percent, sandstone—3 percent, marble—1 percent, and other stone (including schist, conglomerate, argillite, etc.)—7 percent.

It is interesting to note that estimates of 1951 production made two years ago by PIT AND QUARRY (based upon our 1951 questionnaires) closely approximated the actual Bureau of Mines figures. Crushed stone production was estimated to be 283,000,000 tons and sand and gravel production 392,000,000 tons.

Hourly Capacity Information concerning productive capacity in tons per hour for both January 1 and October 1, 1953, was requested in the survey. Although the averages computed from the returns are probably not representative of overall averages, they do, nevertheless, indicate certain trends.

For the sand and gravel producers reporting, the average production capacity increased from 222 to 237 t.p.h. or 7 percent since the beginning of 1953. Capacity increases in the crushed stone industry during that same period were somewhat smaller, averaging only 3 percent (from 249 to 256 t.p.h.) Most of the increases were apparently due to expansion of existing plants rather than the construction of new ones.

The changes by geographic sections for crushed stone were as follows: East—up 2 percent (from 325 to 330 t.p.h.); South—up 6 percent (from 235 to 248 t.p.h.); Midwest—up 2 percent (from 208 to 217 t.p.h.); and West—no change (283 t.p.h.). Changes for sand and gravel were as follows: East—up 7 percent (from 172 to 184 t.p.h.); South—up 5 percent (from 229 to 240 t.p.h.); Midwest—up 4 percent (from 215 to 224 t.p.h.); West—up 14 percent (from 282 to 322 t.p.h.).

Selling Price The survey data indicates that the average selling price of these aggregates increased slightly from January 1 to October 1. The average sand and gravel price advanced from $1.09 per ton to $1.12 per ton, while the

average price for crushed stone increased from $1.40 to $1.41.

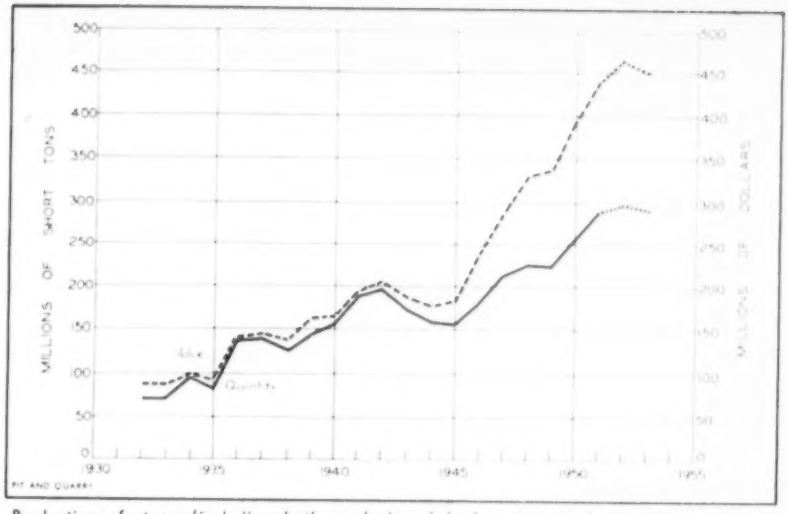
A breakdown by geographic sections shows that sand and gravel prices increased by two cents per ton in the East and South and three cents per ton in the Midwest and West. Crushed stone prices remained unchanged in the South, but increased by two cents, three cents, and four cents per ton respectively in the West, Midwest, and East.

Wages The survey also indicates that during the nine-month period average hourly wages increased for both aggregate industries from $1.41 to $1.46 in the case of sand and gravel and from $1.45 to $1.49 for crushed stone. Wage increases were lowest in the South for both crushed stone and sand and gravel (two cents) and highest in the East for crushed stone (seven cents) and in the Midwest for sand and gravel (six cents). Average hourly wages in the sand and gravel industry ranged from $1.14 in the South to $1.90 in the West, and in the crushed stone industry from $1.22 in the South to $2.04 in the West.

Outlook The aggregate producers sampled by our questionnaires were asked to predict the change in demand for their material in 1954. Among the crushed stone producers reporting, 40 percent of the replies predicted little or no change, 28 percent said they expected modest increases in demand, and 32 percent felt that demand would fall off. Sand and gravel producers expressed a little more pessimism; only 22 percent anticipated increases, while 34 percent expected a drop in business volume and 44 percent indicated little or no change.

A study of the business outlook by geographic sections indicates that eastern producers in both industries and crushed stone producers in the South are somewhat more optimistic than their counterparts from other sections of the country. Another interesting point brought out in the survey is that nearly one-half of the producers of both industries from all sections do not anticipate any change in business volume in 1954. Thus the indication seems to be that production for both industries will be about the same in 1954.

Our questionnaires also requested information regarding plans in 1954 for new plant construction or for expanding existing plants. About 9 percent of the sand and gravel producers and 6 percent of the crushed stone producers reported plans to build new plants in 1954. An additional 18 percent of both industries reported plans to increase plant



Production of stone (including both crushed and broken stone and dimension stone) in the United States, 1932-1953. (Includes both commercial and non-commercial operations). Note: 1932-1951 data is derived from past issues of the Bureau of Mines "Minerals Year book", while 1952 and 1953 figures represent estimates made by Pit and Quarry based on our year-end questionnaire survey.

The new sand and gravel plant of the Janesville Sand and Gravel Company, Janesville, Wis.

View of the new crushed granite operation of the Columbus Rock Co., Columbus, Ga., showing the primary and secondary crushing facilities. The M. C. Granite Co. (not shown here) also began operating a new crushed stone plant in the Columbus area in 1953.

capacity. It is interesting to note that these figures approximated those obtained in our survey of a year ago. Thus the construction of new plants and the expansion of existing plants for both industries are expected to progress at a substantial rate in 1954.

Agricultural Limestone

The use of agricultural limestone in the United States declined slightly in 1952, as compared to 1951, according to a recently-published report of the National Agricultural Limestone Institute. The total use amounted to 27,252,045 tons, which was 1.2 percent less than the 27,583,018 tons used in 1951. A further decline is anticipated for 1953, although the exact amount is uncertain at this writing. It is expected, however, that the decline will be at least one million tons—and perhaps as high as three million tons. The decline is directly related to the substantial decrease in the A.C.P. appropriation for 1953-1954 and to the falling farm net income.

In 1952 Illinois again maintained its leading position among agstone consuming states, using 3,476,089 tons or 13 percent of the total. Iowa ranked a close second, consuming 3,201,820 tons or 12 percent of the total. Other leading states were Missouri (2,829,452 tons or 10 percent); Indiana (2,783,451 tons or 10 percent); Ohio (2,641,646 tons or 10 percent); Wisconsin (1,826,939 tons or 7 percent); Pennsylvania (1,202,061 tons or 4 percent); Kentucky (1,036,412 tons or 4 percent); Virginia (901,777 tons or 3 percent); and New York (819,779 tons or 3 percent). These ten states, representing 23 percent of the states reporting, consumed 76 percent of the total agstone in 1952. These ten states maintained the same rank in agstone usage in 1952 as in 1951.

Of the states reporting, 57 percent showed declines in agstone consumption in 1952. Sectionally the East and South showed slight declines and the Midwest a slight gain. The West remained relatively stable. The gain in the Midwest was accounted for by Ohio (up 330,000 tons or 14 percent above 1951), Indiana (up 169,000 tons or 7 percent), Wisconsin (up 137,000 tons or 7 percent), Michigan (up 117,000 tons or 19 percent), Kansas (up 104 tons or 14 percent), and Nebraska (up 62,000 tons or 118 percent). These Midwestern states offset the major decline reported by Illinois (down 680,000 tons or 16 percent) and Missouri (down 198,000 tons or 7 percent). Other states showing substantial changes in 1953 were Pennsylvania (down 102,000 tons or 8 percent), Oklahoma (down 66,000 tons or 2 percent), North Carolina (down 56,000 tons or 1 percent), Florida (up 82,000 tons or 25 percent), and Virginia (up 49,000 tons or 6 percent).

The National Lime Association also recently issued a consumption of agricultural liming materials report for 1952 (its 24th annual survey), which showed the total domestic consumption to be 26,415,100 tons. This report gave a breakdown by types of liming material. Accordingly agriculture limestone comprised nearly 95 percent of the total, the balance being accounted for by burned lime, hydrated lime, marl, etc.

The new 700 cu. yd. per day expanded shale plant of the Basalt Rock Co., Inc. at Napa Junction, Calif., which produces "New Basalite"; the plant is probably the largest of its kind west of the Rockies.

Slag

According to the latest Bureau of Mines reports, the output of commercial iron blast-furnace slag dropped off in 1952 from 1951, but was higher than in any other year. The total production was 26,899,376 short tons valued at $33,874,209, compared to 1951 production of 29,327,434 tons valued at $36,307,693; this represents declines of 9 percent and 6 percent respectively. The report is based upon returns from 42 companies operating 67 air-cooled slag processing plants and 18 expanded slag plants, as well as 14 companies operating granulated slag plants. The major decline in 1952 output is directly related to the exceptionally long steel strike, which virtually cut off the entire source of supply for the industry for several weeks.

Production in 1953 is expected to have gained about 15 percent over 1952, thereby resulting in the first 30,000,000-ton year during the industry's history. Highlights in the 1953 slag industry include the completion of three new expanded slag plants, which should have increased the expanded slag production considerably during the year. It is believed that 1954 production will closely approximate 1953 output.

A breakdown of the 1952 government report indicates that screened air-cooled slag comprised 79 percent of the total output, unscreened air-cooled slag 5 percent, granulated slag 9 percent, and expanded slag 7 percent. Granulated slag was the only type of slag produced in greater quantities in 1952 than in 1951; the gain was 11 percent.

Iron blast-furnace slag is produced in 15 states, but most of the material is processed in the steel centers of Ohio, Pennsylvania, Alabama, and Illinois, with Ohio maintaining its leading position.

Lightweight Aggregates

The partial data available on the production of the lightweight aggregates industries indicates that these industries have been expanding at substantial rates over the last several years. The growth closely parallels that of the ready-mixed concrete and concrete masonry industries, as well as the trend toward lightweight concrete construction. It is believed that the current annual production of lightweight aggregates is about 28,000,000 cu. yd. This estimate is based partly on this publication's survey (reported elsewhere in this issue) of the concrete masonry industry, the largest consumer of lightweight aggregates, which indicates

that about 972,000,000 8-in. equivalent lightweight masonry units were produced in 1953. Assuming that one cu. yd. of lightweight aggregate produces 50 masonry units, it appears that the block industry alone consumed nearly 20,000,000 cu. yd. of material in 1953. To this figure is to be added the vast volume of lightweight materials used in ready-mixed concrete, pre-cast concrete specialties, plastering and insulation, and many other uses.

Partial production data has been obtained for expanded shale, perlite, and vermiculite, but none is available for pumice, scoria, cinders, and the other lightweight materials.

Expanded Shale That the expanded shale industry is booming is indicated by the fact that there are now about 37 operating expanded shale or clay plants, compared to only eight in 1945. Production of expanded shale in 1953 is estimated at 1,700,000 cu. yd., and it is expected to approximate 2,000,000 cu. yd. in 1954. About one-fifth of these plants mentioned above use the sintering process; the rest are rotary kiln plants. In terms of usage it is estimated that about 80 percent of the production goes into concrete masonry and related precast products. The remainder is used for structural purposes—a trend which has been growing steadily, particularly on the West Coast and in Texas.

Vermiculite According to the latest data available (Bureau of Mines report, 1952), expanded vermiculite and vermiculite ore production each remained virtually the same in 1952 as in 1951. Total ore production amounted to 208,906 tons valued at $2,081,993; this compares to the 1951 output of 209,008 tons valued at $2,093,953. No data for expanded vermiculite production is available, although the annual value of this material has approximated $16,000,000 for 1950, 1951, and 1952. It is expected that 1953 production of both crude and expanded vermiculite will be about the same as in 1952.

Major uses of expanded vermiculite in 1953 continued to be loose fill insulation, plaster aggregate, and concrete aggregate; other uses were aggregate in precast concrete specialties (such as roof tile) and acoustical plastics. A major trend evident in 1953 was the expanding use in the machine application (air placement) of vermiculite concrete, which represents an economical way of insulating and fireproofing steel structures. Gains in the use of vermiculite as a soil conditioner, as an inert filler in fertilizers, and as refractory insulation were also notable in 1953.

According to the Bureau of Mines, expanded vermiculite plants are located in 31 states and in the District of Columbia.

One of the new perlite ore processing plants of 1953 is that of the California Perlite Corporation, located at Klondike, Calif., about 180 miles east of Los Angeles.

Perlite Estimates of the Perlite Institute indicate that the perlite industry set a new production record in 1953, exceeding the 1952 production of expanded perlite by 22,000 tons or about 15 percent. The estimated production is 178,000 short tons valued at close to $9,000,000. The total sales of crude perlite is expected to total 189,000 tons valued at $1,150,000.

The Perlite Institute reports that the outlook for 1954 appears to be good and that sales should increase slightly in spite of the slight decline expected in building construction. Expansion of sales is expected in the fields of insulating concrete and in mill-mixed perlite-plaster.

In 1953 increases were noted in the sale of expanded perlite for foundries, for loose-fill insulation, and for use as an emergency filtration additive. However, probably about 90 percent of the output was used in lightweight plaster and insulating concrete.

Three major developments in 1953 affecting the industry include the following: (1) inauguration of a program to certify and label perlite plaster aggregate meeting A.S.T.M. specifications; (2) recognition by all of the major gypsum companies of the value of perlite as a plaster aggregate; and (3) development of a sizable market in Canada. By the end of 1953, 33 perlite manufacturers had signed certification agreements with the Perlite Institute, and 26 companies were marketing a certified perlite plaster aggregate. In 1953 all of the major gypsum companies were distributing mill-mixed perlite and gypsum plaster, with several of the companies installing their own processing plants. Regarding the Canadian development, four perlite expanding plants are already in operation, and several others are now under construction.

According to the latest Bureau of Mines report on the perlite industry (1952), production of expanded perlite in 1952 reached 155,955 tons and sales 154,963 tons, or a gain of 16 percent over 1951. Crude perlite production, amounting to 164,845 tons, was reported from seven western states, with New Mexico and Nevada producing 73 percent of the total and California, Colorado, and Oregon, 24 percent. Production of expanded perlite was reported in 72 plants located in 30 states, including 13 in California, 5 each in Illinois, Ohio, and Texas, and 4 in Pennsylvania. Production was reported for the first time in Florida, Massachusetts, and Nebraska.

Output of Concrete Products Continues at High Levels

From all available evidence the indication is that 1953 was another bumper year productionwise for the three major branches of the concrete industries, namely block, ready-mixed concrete, and pipe. Production of concrete block for 1953 is estimated to be 1,800,000,000 8-in. equivalents, or a gain of one percent over 1952. Ready-mixed concrete production is estimated to have gained 6 percent over 1952, reaching a total output of 58,000,000 cu. yd. It appears that pipe production equaled or possibly may have exceeded by five percent the 11,000,000-ton record output established in 1952. More detailed production information appears on page 242 of this issue.

Review and Forecast

Other Non-Metals

Many Industries Maintain High Production

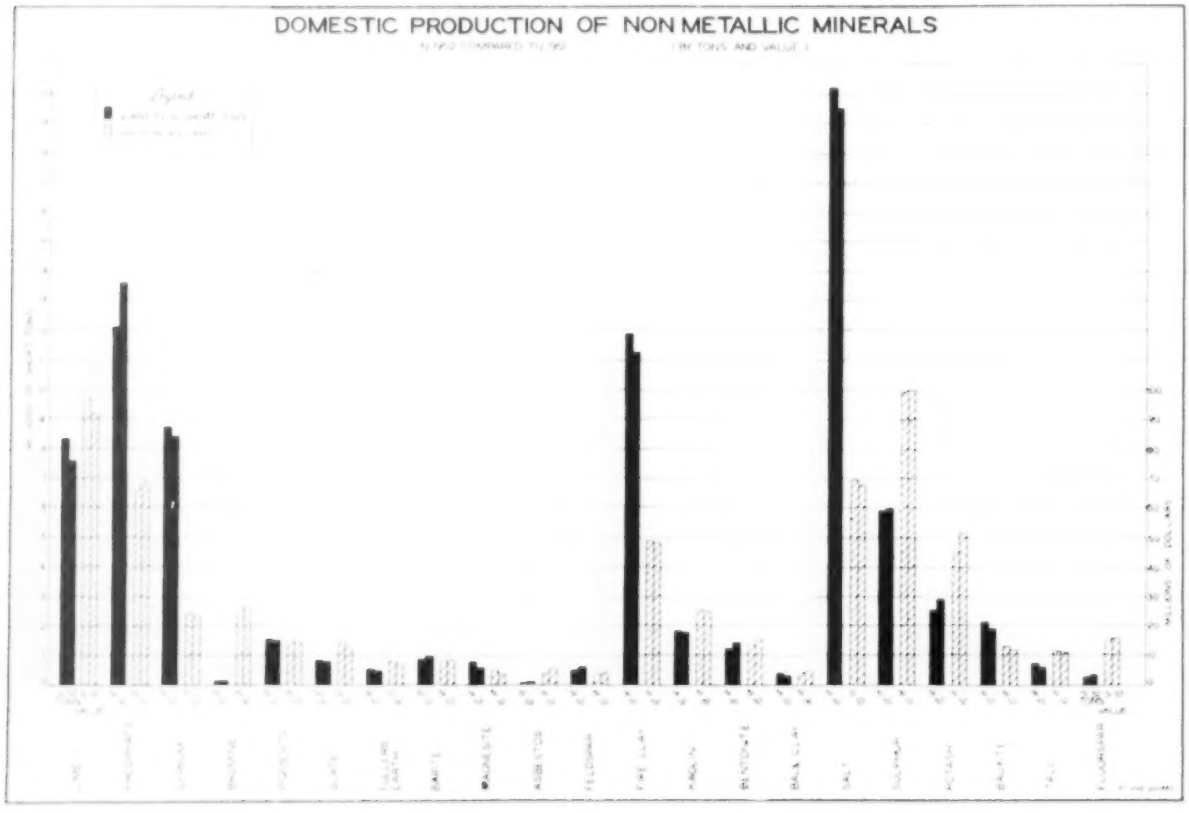
By KENNETH A. GUTSCHICK

BASED upon preliminary reports of the U. S. Bureau of Mines, the production performances of the nonmetallic minerals industries in 1952, the year for which the latest complete production data is available, was somewhat irregular. The general indication, however, is that the industries as a whole about equaled the high levels of production reached in 1951. Several of the industries attained all-time high production records in 1952, while others showed slight gains over 1951. On the other hand, about one-half of the industries showed minor to significant declines in output in 1952.

From the partial 1953 data available at the time of this writing, it appears that production in 1953 continued to be carried on at high levels and perhaps even exceeded 1952 by a slight amount. It is expected that several production records were again attained in 1953. For example, total lime shipments at the end of July 1953, were 17 percent ahead of the similar period in 1952. From this it appears that 1953 output will reach at least 8,500,000 tons and may possibly be as high as 8,800,000 tons; this would mean exceeding the previous record high (1951) by from 3 to 7 percent. Phosphate production likewise should reach an impressive record high in 1953, since mine production for the first six months of 1953 was 14 percent ahead of the same period in 1952. From this it appears that phosphate output will approximate 13,500,000 long tons, or roughly 12 percent above the peak 1952 level.

Partial 1953 data for fluorspar (first six months), for bauxite (9 months), and sulphur (9 months), indicate that output for those periods is slightly below the corresponding periods in 1952. Thus, it seems that production of these minerals in 1953 will either equal 1952 output or decrease by a very slight amount. Thus fluorspar, bauxite, and sulphur output should approximate 345,000 short tons, 1,-

This graph summarizes the latest complete available data on the production of nonmetallic minerals in the United States; 1952 production in both short tons and value is compared with 1951 production. All-time high production records were established in 1952 by asbestos, barite, bromine, bentonite, phosphate, potash, and sulphur, and near record highs by feldspar, gypsum, fire clay, and salt. Lime and phosphate production is expected to have reached record highs in 1953.



600,000 long tons, and 5,250,000 long tons respectively.

Data available on the production of gypsum during the first half of 1953 indicate that output of crude mined gypsum declined 3 percent from the corresponding period in 1952. From this it is expected that 1953 output will decline to 8,200,000 tons, which will be roughly 5 percent below the peak output established in 1951.

The six minerals mentioned above are the only ones for which 1953 production data exists at this time. Because of this fact, it will be appropriate here to present a general picture of the nonmetallic mineral industries for 1952, the year of the latest complete mineral statistics. Accordingly, in 1952, the industries attaining all-time high production records, with the percent of increase over 1951, were as follows: asbestos, up 4 percent; barite, 11 percent; bromine, 3 percent; bentonite, 17 percent; phosphate, 12 percent; potash, 16 percent; and sulphur, 0.3 percent. Fluorspar, feldspar, and kyanite also showed increases in 1952 over 1951, amounting to 1 percent for fluorspar and 5 percent for the other two minerals; however, these figures did not represent all-time highs. In the case of feldspar, however, the 1952 output ranked second highest in the industry's history.

On the other hand, many of the industries discussed here showed slight decreases in 1952 production, including bauxite, down 10 percent; clay, 3 percent; fuller's earth, 13 percent; graphite, 21 percent; gypsum, 3 percent; lime, 5.5 percent; magnesite, 24 percent; mineral pigments, 2 percent; salt, 3 percent; slate, 10 percent; and talc and pyrophyllite, 6 percent. In addition, natural abrasives (including silica sand, tripoli, etc.) and artificial abrasives showed minor declines in 1952 output.

As a means of illustrating the latest production performances of the nonmetallic mineral industries, Pit and Quarry has prepared a graph appearing in this section which shows the output by both tonnage and value for both 1951 and 1952. This graph not only illustrates the recent growth of the various industries, but also indicates the relative importance of each one.

In the discussion which follows, the six minerals mentioned above for which partial 1953 production data is available, will be considered first.

Lime According to the Bureau of Mines domestic shipments of open-market lime in 1952 totalled 7,770,545 tons, which was a 5.5 percent decline from the record 8,225,512 tons reported in 1951. In spite of the decline, 1952 was the second highest year in the industry's history. From data available covering the first seven months of 1953, it appears certain that the 1951 peak will be broken by a considerable amount. Shipments through July, 1953, totalled 4,991,258 tons or 17 percent above the corresponding period in 1952. Based upon this data, 1953 lime shipments will probably reach an all-time peak of 8,500,000 to 8,800,000 tons.

In 1952 quicklime shipments, comprising 77 percent of the total, declined 6 percent from 1951 to 5,947,401 tons, while hydrate lime shipments (comprising the other 23 percent) declined 5 percent from 1951 to 1,823,144 tons.

A breakdown of the major uses of both quicklime and hydrated lime showed that chemical and industrial uses totalled 4,467,084 tons or 57 percent of the total output; refractory dolomite, 1,924,789 tons or 25 percent; building lime, 1,129,511 tons or 15 percent; and agricultural lime, 249,161 tons or 3 percent. It is interesting to note that these percentages were virtually the same for 1951. All of these uses showed declines in 1952 over 1951, including chemical and industrial lime, down 5 percent; refractory dolomite, down 2 percent; building lime, down 9 percent; and agricultural lime, down 27 percent.

Preliminary figures covering the major uses for chemical lime in 1952 indicate that metallurgical lime shipments exceeded 1,500,000 tons or approximately 41 percent of the total chemical lime output. Other chemical uses and the percent of the total output were paper, 18 percent; water treatment, 16; calcium carbide, 15; glass works, 6; sewage and trade waste, 2; and insecticides, 2 percent.

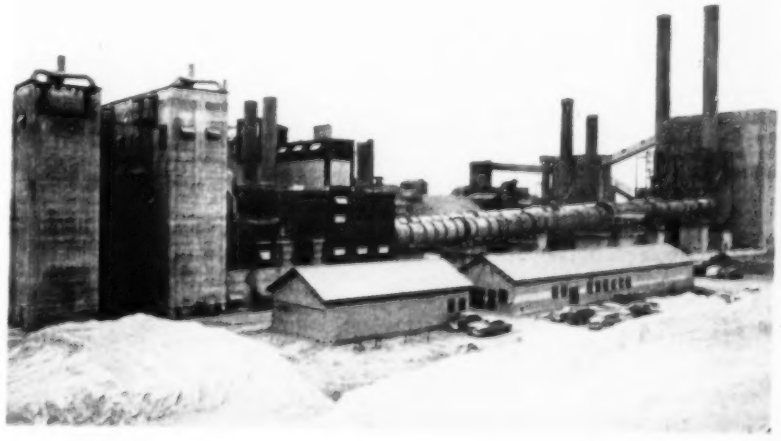
According to the Bureau of Mines the annual lime burning capacity as of June 1953 approximated 9,200,000 tons, which represents a 7 percent increase over the 8,600,000 tons reported in June 1952.

Preliminary production figures for the first seven months of 1953 showed quicklime shipments amounting to 3,888,379 tons and hydrated lime shipments 1,102,879 tons, representing gains of 21 percent and 2 percent respectively over the corresponding seven-month period in 1952. The major gain in quicklime output is largely accounted for by refractory dolomite production, which totalled 1,376,339 tons (28 percent of the total output), representing a gain of 44 percent over the 1953 figures. This enormous gain can be accounted for largely by the long steel strike occurring early in the summer of 1952, which reduced the demand for refractory dolomite during that period to the minimum, contrasted to the high steel production during 1953. The partial 1953 lime data also indicated that chemical and industrial uses showed important gains (12 percent) over the corresponding period in 1952, while agricultural lime and building lime each dropped 2 percent.

A relatively new use for lime, which has been increasing considerably, is in the field of road stabilization. In 1952 the Bureau of Mines reported this use for the first time; approximately 9,000 tons of lime were shipped for that purpose in 1952.

Gypsum Activity in the gypsum industry, according to producer's reports[1] to the Bureau of Mines, was generally lower in 1952 than in the record year 1951, as shown by the 3-percent decrease in the quantity of domestic crude mined

The capacity of the refractory dolomite industry was expanded some 300,000 tons annually by the recent addition of two 11-ft. 3-in. by 390-ft. kilns at Basic Refractories' Maple Grove, Ohio plant; this expansion made the Basic plant the largest of its kind in the world.



A view of the new hydrated lime plant of Gypsum, Lime & Alabastine, Canada Ltd. at Beachville, Ontario. The hydrate plant building and truck loading facilities are on the left and the lime plant on the right.

and a decline of 8 percent in the tonnage of calcined gypsum produced. Mine production in 1952 amounted to 8,415,300 tons, the second highest in the industry's history. Production of calcined gypsum totalled 6,874,432 tons. However, many of the year's losses were principally concentrated in the first quarter, when housing starts were at a low point even on a seasonal basis. Some improvement was noted in the second and third quarters, and by the last three months of the year several of the gypsum products were being sold in record quantities.

Partial production data for 1953 (first 6 months) shows gypsum production to be 3 percent off from the corresponding period in 1952; the half year output amounted to 3,750,257 tons. The indication is that the total 1953 production will amount to 8,200,000 tons. Cumulative half-year totals point to a growing shift towards imported crude gypsum, the continuing lessened demand for base coat plaster, and the increasing use of uncalcined gypsum products, industrial gypsum products, sanded plasters (and perlite pre-mixed plasters), unclassified building plasters, lath, and wall board. It is expected that the production of gypsum lath, wall board, and sheathing in 1953 will closely approximate the 1951 peak of 6,100,000 sq. ft.

Comparing the 1953 half-year totals with the 1952 totals for the same period, the following increases were notable: imports (up 12 percent); cement retarder (up 10); agricultural gypsum (up 5); filler (up 11); industrial uses (up 4); sanded plaster (up 72); Keene's cement (up 42); lath (up 7); wallboard (up 17); and sheathing (up 18). Decreases were shown by base coat plaster (down 11 percent), gaging and molding plaster (down 6), and tile (down 17).

The outlook for 1954 is good, and it appears that the gypsum industry will continue to operate at a high level of production. Gypsum manufacturers are gearing their 1954 production for nearly 1,000,000 home starts and for an increase of almost 20 percent in the home improvement market. In line with this growing market, the gypsum industry will conduct a nation-wide "add-a-room" promotion which will reach a climax in May (designated as add-a-room month). The industry also looks for a rise in the use of its products in commercial and industrial construction in 1954.

In 1952 (for which there is the latest complete data) uncalcined gypsum production amounted to 2,705,727 tons in 1952—a gain of 7 percent over 1951. Within this group cement retarder comprised 67 percent and agricultural gypsum 32 percent; both uses showed increases in 1952, with agricultural gypsum making a major gain of 26 percent (to 866,000 tons).

Under the calcined group, industrial uses totalled 252,216 tons, a decline of 13 percent from 1951. Building plasters and Keene's cement uses amounted to 2,563,798 tons, or a decline of 10 percent from 1952. Most of the decline was accounted for by base coat plaster (down 12 percent) and gaging and molding plaster (down 15 percent). However, record quantities of sanded plaster (178,000 tons-up 43 percent) were sold in 1952. The demand for wall board continued high in 1952, and a new record was established; the gain was 2 percent over 1951. Lath production, however, declined 16 percent.

For the third successive year output of crude gypsum from mines in the United States exceeded 8,000,000 tons. A total of 56 mines (one more than in 1951), located in 19 states, reported production during the year; of these, 40 were open-pit operations, 13 were underground mines, and three were combination pit-underground mines. California had the most mines 13; New York and Texas each reported five mines. Michigan and California were the two leading producers, accounting for 18 and 15 percent of the total respectively. California was the only state to show an increase in production in 1952 over 1951 (13 percent).

Imports of crude gypsum into the United States in 1952, amounting to a little over 3,000,000 tons, declined 11 percent from the 1951 figure. Canada supplied 91 percent of the total quantity imported, or approximately one-fourth of the apparent domestic supply. Imports declined from every foreign source except Jamaica, which exported to the United States about 60 percent more than in the preceding year.

Phosphate Phosphate rock produced in the United States in 1952 gained 10 percent over 1951 and reached a record high of 12,031,213 long tons, according to reports by producers to the Bureau of Mines. In previous years, this production was recorded as mine production while actually it was a composite of salable products from washers and concentrators of Florida hard rock, Florida land pebble, and Tennessee brown rock; drier production of Florida soft rock (collodial clay); mine production of Western rock plus tonnages of Florida land pebble and Tennessee brown rock ore (matrix) used directly. The actual mine production of phosphate ore (total tons of material mined) in 1952 in the United States was estimated as 32,800,000 long tons.

Based on production data available for the first half of 1953, it is expected that 1953 production will set an all-time record, reaching 13,500,000 long tons or about 12 percent above the 1952 level. For the first half of 1952 domestic mine production totalled 6,563,805 long tons or a rise of 14 percent above the corresponding period in 1952.

Phosphate rock sold or used in the United States during this six-month period amounted to 6,211,800 long tons valued at $37,133,946 which exceeded sales during the same period in 1952 by 10 percent. Increases were reported in Florida (1 percent), Tennessee (2 percent), and the Western states (92 percent). (The West-

ern states produced 12 percent of the total compared to 9 percent in 1952.)

In 1952 Florida and Tennessee continued to be the two leading phosphate producers, with Florida accounting for 78 percent and Tennessee 13 percent of the total output. The four Western states (Idaho, Utah, Montana, and Wyoming) produced the balance. All three areas mentioned above registered increases in 1952 with the Western states up 21 percent, Florida up 12 percent, and Tennessee up 1 percent.

Phosphate rock sold or used by producers in the United States in 1952 surpassed the previous record high (1951) by 2 percent, totalling $68,120,918. Increases were reported in both Florida (4 percent) and Tennessee (2 percent), while the Western states showed a drop of 7 percent.

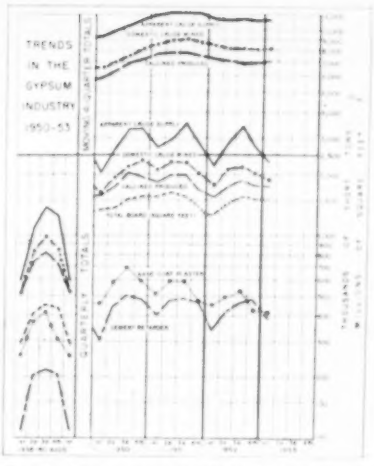
Imports amounting to about 110,000 tons again showed an increase over the previous year while exports amounting to 1,400,000 tons were less in 1952 than in 1951. The apparent domestic consumption of phosphate rock set a new record, rising to 10,032,580 tons or more than 5 percent above 1951 and more than 144 percent above 1942.

In 1952 the United States produced nearly one half of the estimated world's total production of 25,000,000 metric tons. Approximately 55 percent of the domestic production was used for superphosphates, 20 percent for phosphates, phosphoric acid, and phosphorus, and 7 percent for direct application to soil. Exports comprised 15 percent of the total.

Sulphur In 1952 new records were established in the production of both native and recovered sulphur in the United States, according to reports of producers to the Bureau of Mines. Native sulphur production totaled 5,293,145 long tons as compared with 5,278,249 in 1951.

From preliminary figures through the first nine months of 1953, it appears that 1953 production will fall a little short of the record level attained in 1952. Production through September, 1953, amounted to 3,916,484 long tons or about 2 percent below the same period in 1952. Judging from the fact, it is expected that 1953 production will approximate 5,250,000 long tons.

During 1952 the Texas Gulf Sulphur Company reported production of 2,957,557 long tons; Freeport Sulphur Company, 1,691,995; Jefferson Lake Sulphur Company, 405,383; and Duval Sulphur & Potash Company, 238,210. In 1952 the Texas Gulf Sulphur Company expanded



Graph showing recent trends in the gypsum industry.

production capacity at Moss Bluff dome and in May the company began mining at Spindletop dome. Both of these deposits are in Texas. Production of sulphur at Bay St. Elaine dome in Louisiana was started by Freeport Sulphur Company in November, 1952. Freeport also proceeded with the development of Garden Island Bay and Chacahoula domes in Louisiana and Nash dome in Texas.

Production of recovered elemental sulphur (of a purity of 97 percent or better) at gas treatment plants increased from 184,013 long tons in 1951 to 248,076 in 1952. This increase is a result of the expansion programs of companies processing sour natural gas. For the first three quarters of 1953 elemental sulphur production was slightly higher than 250,000 tons, and accordingly it is expected that the yearly production will exceed 320,000 tons or 28 percent higher than in 1952.

The sulphur industry's plant capacity was increased considerably during 1953 by the construction of three new plants, which went into operation late in the year. They included Freeport Sulphur Company's 500,000 ton per year plant at the mouth of the Mississippi River in Louisiana; Standard Sulphur Company's $450,000 plant at Damon mound near Houston, Tex.; and Lone Star Sulphur Corporation's $670,000 400 ton per day plant located at Long Point salt dome in Fort Bend County near Richmond, Tex.

Industry capacity will be further expanded in 1954 with the expected completion of two more Freeport Sulphur Company installations, one located at the Nash dome near Houston, Tex., and the other in the Chacahoula area 60 miles west of New Orleans, La.

Bauxite Domestic mine production of bauxite in 1952 declined 10 percent from the all-time high record of 1,848,676 long tons (dry equivalent) valued at $12,477,516 established in 1951; the 1952 output totalled 1,667,047 long tons (dry equivalent) valued at $10,776,254. Figures released by the Bureau of Mines covering the first nine months of 1953 indicate that 1953 production will probably fall slightly below the 1952 level and approximate 1,600,000 tons.

Arkansas continued to be the leading bauxite producing state in 1952, accounting for 96 percent of the total domestic output; eight companies operated mines in the area south of Little Rock. Production was also reported by two firms operating mines near Eufaula, Ala., and another firm in Georgia. Despite the reduced mine output in 1952, shipments of crude and processed bauxite to consumers increased 31 percent; however, the amount of crude ore that was dried, calcined, or activated before shipment declined about 50 percent from 1951. The principal cause of this decline was Alcoa Mining Company's change in operations from shipping dried bauxite to their East St. Louis alumina plant to sending crude ore directly to their new alumina plant at Bauxite, Ark.

The reduced 1952 output was offset by the record total of imports of crude ore (nearly 3,500,000 long tons), which exceeded the 1951 imports by 21 percent. An increasing dependence on foreign sources of bauxite became evident as imports comprised 68 percent of the total supply (imports plus domestic production) compared to 60 percent in 1951. Surinam, which has been the principal supplier since 1928, provided slightly over 3,000,000 long tons or roughly 86 percent of the total imports. The remainder came largely from Jamaica (a new source of supply) and British Guiana.

Bauxite consumption increased 7 percent to 4,240,891 long tons (dry basis) in 1952, an annual level surpassed only by the peak war year of 1943. Most of the increase resulted from the greater demand for alumina by the expanding aluminum industry. (Production of primary aluminum rose 12 percent in 1952 over 1951). 1952 was marked by the expansion of each of the four older alumina plants, the addition of a fifth plant (in Bauxite, Ark.), and the construction of a sixth plant (near Corpus Christi, Texas). A breakdown of uses for bauxite in 1952 includes the following: alumina, 88 percent; abrasives, 6 percent;

chemical, 4 percent; and refractories and other uses, each 1 percent.

Domestic bauxite production from January through September, 1953, totalled 1,179,351 long tons, which was about 18,000 tons lower than the corresponding period in 1952. Offsetting this minor decline in domestic production during the comparable nine-month periods was an increase of imports of about 700,000 tons or about 28 percent, bringing the total imports during the 1953 period to 3,213,753 tons. Based upon the latest data available, it appears that the total new supply of bauxite will reach a record high of 5,900,000 tons, an increase of 13 percent over the peak established in 1952.

Fluorspar Production and shipments of fluorspar in the United States amounted to 346,315 and 333,769 short tons respectively in 1952, an increase of 1 percent in output over 1951 but a decrease of 4 percent in shipments, according to the Bureau of Mines. Imports established an all-time high of 379,402 short tons in 1952, nearly double those of 1951, the former record year. In 1952, for the first time, imports exceeded domestic production. Consumption of fluorspar likewise established a new record of about 522,000 tons, a gain of 5 percent over the former record year 1951. Stocks at consumers' plants (252,000 tons) on December 31, 1952, were the largest ever recorded.

In 1952 the steel industry continued to be the principal user of fluorspar, absorbing about 52 percent of the total consumption; use by the steel industry was 2 percent less than in 1951. The hydrofluoric-acid industry, the second largest user of fluorspar, accounted for 34 percent of the total amount consumed; this use was 15 percent greater than in 1951. The remainder of fluorspar consumption in 1952 was accounted by glass (7 percent), enamel (1 percent), and other uses (6 percent). Use of fluorspar by glass and enamel plants was down slightly in 1952.

Fluorspar production and shipments for the first six months of 1953 totalled 162,381 tons and 158,662 tons respectively; this was virtually the same output figure for the similar period in 1952, but represents a 7 percent increase in shipments. From the data it apears that 1953 output will approximate 345,000 tons.

Potash The domestic production of marketable potassium salts reached a new high of 2,866,462 tons (1,665,113 tons K_2O equivalent) in 1952, increasing more than 16 percent above the 1951 output, according to reports by producers to the Bureau of Mines. Sales and apparent consumption of potassium salts both increased in 1952, 12 percent and 4 percent respectively, as compared to 1951. Stocks in producers' hands at the end of 1952, more than double the 1951 figure, were 171,807 tons with a K_2O content of 99,061 tons.

Both imports and exports of potash materials were less in 1952. Imports totaled 363,898 tons (190,862 tons K_2O) as compared to 574,361 tons (313,617 tons K_2O) in 1951. In 1952 West Germany, East Germany, France, Spain, and Chile, respectively, supplied 32, 27, 19, 11, and 8 percent of the total United States imports of potash. Exports of potash materials totaled 101,200 tons, 19 percent less than in 1951, with over 97 percent going to countries in the Western Hemisphere.

The production of higher-analysis materials (60-62 percent K_2O) continued to increase and constituted 86 percent of the total potassium salts produced in the United States. Production of the lower grade muriate (49-50 percent K_2O), manure salts, sulfate of potash and sulfate of potash-magnesia all decreased in 1952. The production of manure salts has dropped from a high of 260,339 tons in 1948 to 8,409 tons in 1952.

California, New Mexico, and Utah continued to supply the major portion of the domestic production of potash, with New Mexico supplying over 88 percent; a fifth major producer began operations in New Mexico late in 1952. New Mexico's output increased 15 percent in 1951.

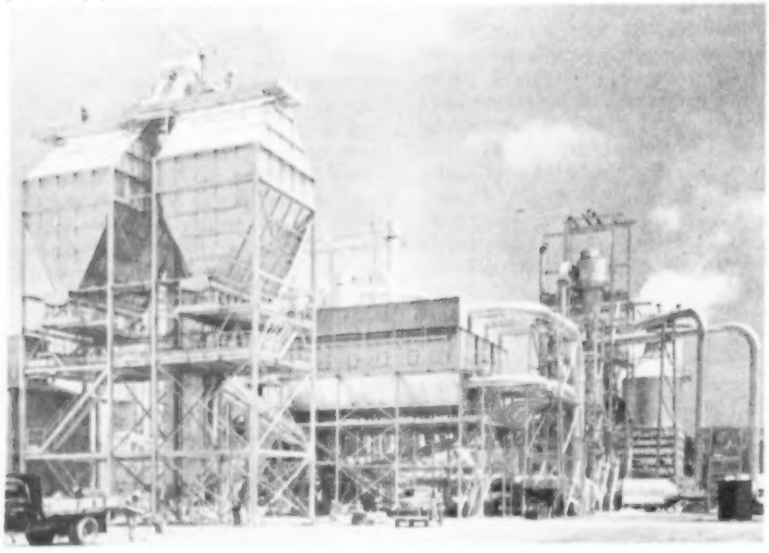
Salt After attaining an all-time high output of 20,207,131 tons valued at $69,735,000 in 1951, domestic salt production dropped off 3 percent in 1952 to 19,544,952 tons, according to the Bureau of Mines. No further data on the 1952 salt industry was available at the time of this writing.

Bromine According to an advance report of the Bureau of Mines, the production of bromine (sold or used by producers) reached an all-time high of 156,201,577 lb. gross weight (approximately 133,000,000 lb. bromine equivalent) in 1952, exceeding the previous record high in 1951 by 3 percent. No further data on 1952 bromine output is available.

Boron Minerals The production of boron minerals in 1952 declined about 32 percent from the all-time high established in 1951; the amount reported sold or used by producers in 1952 was 583,828 tons according to the Bureau of Mines. No further data is available on 1952 production.

Asbestos Sales of asbestos produced in the United States exceeded those of 1951 by 4 percent and reached an all-time high of 53,681 tons valued at $4,713,032, but amounted to only 17 percent of domestic requirements, according to reports by producers to the Bureau of Mines. Vermont continued as the principal asbestos-producing state in 1952. Arizona sales, which were a little higher than in 1951, were chiefly of the nonspinning grades, but also included some high-quality iron-free spinning fiber. Discovery of rich, new deposits of chrysotile asbestos was reported in the Globe area of Arizona in the early part of 1953. Amphibole asbestos sales, which were usually small, were confined to Georgia.

Great Lakes Carbon Corporation's (Dicalite Division) modern new diatomaceous earth processing plant at Lompoc, Calif.



Imports (amounting to 709,419 tons) and apparent consumption were both smaller in 1952 than in 1951, but the decline was confined to the shorter grades. Imports of low-iron chrysotile of spinning grades from Southern Rhodesia continued to decline.

In 1952 Canada continued as the world's leading producer of asbestos, accounting for 59 percent of the world output of 1,425,000 metric tons.

Talc Domestic mine production of talc, pyrophyllite, and ground soapstone amounted to 600,968 tons in 1952, a decrease of 6 percent from the record high production of 1951, according to reports by producers to the Bureau of Mines. Pyrophyllite production, however, was 5 percent greater than in the previous year, totalling 125,496 tons. The quantity of these commodities sold by producers decreased 7 percent, but increased in value to $11,347,317, a new high.

As in 1951, New York, with 25 percent of the output, California (20 percent), and North Carolina (19 percent) ranked first, second, and third, respectively, in production and sales of talc, pyrophyllite, and ground soapstone in 1952. Pyrophyllite output was reported from North Carolina, the major producing state, and California.

Six industries—ceramics, paint, insecticides, rubber, roofing, and paper—consumed 83 percent of the domestic production of talc, pyrophyllite, and ground soapstone in 1952, ranking in the same order as in 1951. Ceramics led with 24 percent of the total.

Feldspar According to reports by producers to the Bureau of Mines, crude feldspar production in 1952 increased 5 percent in tonnage (to 420,831 long tons) and 31 percent in value (to $3,696,018) over 1951. Ground feldspar increased 1 percent in quantity but decreased 3 percent in value. The 1952 production was the second largest in the history of the industry, being exceeded only by the 1948 production, and the value reported in 1952 exceeds all previous years. Ten states reported production in 1952, compared with 11 in 1951.

North Carolina was the only state that showed an increase in feldspar production in 1952, compared with 1951, and was the largest producer, with 57 percent of the total quantity (42 percent in 1951). South Dakota was second, with 10 percent of the total (12 percent in 1951), and Colorado was third, with 9 percent of the total (13 percent in 1951).

Ruberoid Company's new asbestos operation near Eden, Vt., which produces about 96 per cent of the chrysotile asbestos produced in the U.S. Shown here is the mill building, drying department, and dried ore storage building.

Ground feldspar sold by merchant mills in the United States was the largest quantity sold since 1948. The number of producing states was 14, the same as for the past several years. Quantity sales of ground feldspar to the pottery industry decreased 23 percent, and sales to the enamel industry decreased less than 1 percent, but the quantity of ground feldspar shipped to the glass industry increased 27 percent in 1952 over 1951.

Clay Clay production, comprising kaolin, ball clay, fire clay, bentonite, fuller's earth, and other clays, decreased 3 percent in 1952, according to reports of producers to the Bureau of Mines. The 1952 output (sold or used by producers) totalled 42,193,221 tons, compared to 43,415,779 tons in 1951.

Most users of clay registered decreases. Kaolin sales, amounting to 1,829,102 tons, decreased 2 percent, and ball clay sales, amounting to 305,083 tons, declined 11 percent in 1952, compared with 1951, but the value of ball clay in 1952 was somewhat greater than in 1951.

The major use of kaolin in 1952 remained about the same as for the past several years, with the paper, rubber, refractories, and pottery industries being the principal consumers. Over 73 percent of the ball clay sold in 1952 was consumed in the pottery industry.

Bentonite In 1952 all records for bentonite production were broken, according to reports of producers to the Bureau of Mines; tonnage increased 17 percent to 1,421,902 tons and value increased 19 percent to $15,431,214 in 1952 over 1951. The entry of one large new producer in Wyoming partly accounted for the increase in production. The increased activity in oil well drilling plus new applications in drilling also have influenced the bentonite output.

The foundry and petroleum industries consumed 91 percent of the total tonnage: rotary-drilling mud accounted for 50 percent (705,280 tons); filtering and decolorizing oils 21 percent (307,685 tons); foundry-sand bond 23 percent (322,746 tons); and the remainder, 86,191 tons or 6 percent of the national output, went into a variety of uses.

Eleven states reported bentonite production in 1952 compared to nine in 1951. States reporting in 1952 that did not report in 1951 were Louisiana, Oklahoma, and Montana. Idaho reported in 1951 but not in 1952.

The Wyoming-South Dakota district accounted for 63 percent of the total bentonite production in 1952 (Wyoming 49 percent and South Dakota 14 percent) compared with 71 percent in 1951 and 60 percent in 1950. Texas accounted for 2 percent in 1952 compared with 3 percent in 1950 and 1951.

Fuller's Earth Production of fuller's earth decreased 13 percent to 422,853 tons valued at $6,875,483 in 1952 compared to 1951, according to reports of producers to the Bureau of Mines.

All reporting districts showed a decrease in tonnage in 1952 compared with 1951. The Florida-Georgia area accounted for 64 percent of the total tonnage produced in 1952, compared with 62 percent in 1951 and a like amount in 1950. Production in Texas represented 25 percent of total United States production in 1952 compared with 29 percent in 1951, and 28 percent in 1950.

Kyanite Domestic kyanite production showed a small increase in both tonnage and value in

1952 over 1951, according to reports by producers to the Bureau of Mines. There were only two producers in the United States, including Commercialores, Inc., working deposits near Clover, S. C., and Kyanite Mining Corp., operating a mine near Farmville, Prince Edward County, Va. No production of andalusite, dumortierite, sillimanite, or topaz was reported.

Exclusive of material purchased for the National Stockpile and electro-cast mullite, domestic kyanite consumption from all sources, including synthetic mullite, amounted to about 30,000, 38,000, and 40,000 tons, respectively, for the years 1950, 1951, and 1952.

Consumption of imported kyanite in 1952, showed a decrease of 70 percent. This large decrease resulted from the increased use of synthetic mullite produced from domestic raw materials.

India continued as the principal exporter of kyanite to the United States, supplying 53 percent of the total imports; British East Africa supplied 29 percent, and the Union of South Africa supplied 16 percent.

Abrasives In 1952 nearly all of the materials classed as abrasives showed a decline in output, both in tonnage and value, from 1951, according to the Bureau of Mines. Output of both natural and artificial abrasives was valued at approximately $58,000,000, a decline of 6 percent from 1951. Artificial abrasives accounted for 82 percent of the total value of product.

Output and relative changes of individual natural abrasives in 1952 were as follows: ground sand and sandstone, 792,802 tons valued at $6,922,586 (both amounts down 3 percent); quartz, 246,604 tons valued at $1,013,637 (down 12 and 13 percent respectively); tripoli, 35,459 tons valued at $1,043,124 (down 5 and 6 percent respectively); garnet, 11,390 tons valued at $981,841 (down 19 and 21 percent respectively); emery, 10,352 tons valued at $141,911 (both down 11 percent); grinding pebbles, 4,140 tons valued at $96,537 (up 35 and 15 percent respectively); grindstones, 3,962 tons valued at $246,526 (down 29 and 22 percent respectively); and tube-mill liners, 1,083 tons valued at $66,218 (down 23 and 14 percent respectively).

Output and relative changes of artificial abrasives in 1952 were as follows: silicon-carbide, 91,531 tons (down 9 percent) valued at $12,040,946 (up 3 percent); aluminum-oxide, 180,375 tons valued at $17,813,760 (both down 17 percent); and metallic abrasives (steel shot and grit), 157,034 tons valued at $17,502,275 (down 5 and 2 percent respectively).

Illinois continued to be the largest producer of ground sand and sandstone. Users of these products included pottery, porcelain, and tile industries (38 percent); abrasive uses (23 percent); foundry use (15 percent); filler (14 percent); enamel (4 percent); and others (6 percent).

In 1952, sales of high-silica sands used for abrasive purposes such as glass grinding and sand blasting amounted to about 1,500,000 tons valued at about $3,000,000; blast sand alone accounted for one-third of the amount by tonnage and one-half by value.

Imports of abrasives in 1952 reached $67,418,543 or an increase of 3 percent over 1951. American exports of abrasives declined 24 percent to $19,196,200.

Barite Domestic output of barite (sold or used by producers) reached an all-time high of approximately 942,000 tons in 1952—an increase of 11 percent over 1951. This record output exceeded the previous record high of 1947 by 7 percent. No further data is available on 1952 barite production, although it is believed that larger tonnages of barite were used for concrete aggregates (in heavyweight concrete construction).

Mineral Pigments Sales of natural and synthetic iron-oxide pigments declined slightly in 1952, according to reports by processors to the Bureau of Mines. Sales totaling 123,236 tons valued at $13,542,485 decreased about 2 percent in quantity and 9 percent in value compared with 1951.

Natural iron-oxide pigments accounted for 55 percent of the total tonnage produced in 1952. Red oxides accounted for 40 percent of the natural iron-oxide pigments or 22 percent of the total mineral pigments. Natural brown oxides (metallic brown) represented 11 percent of the natural iron-oxide pigment sales; yellow oxides represented 6 percent.

Synthetic iron-oxide pigments sold by producers in 1952 totaled 55,190 tons or 45 percent of the total mineral pigment sales. Pure red oxides represented 40 percent of the synthetic sales and pure yellow oxides represented 24 percent.

Sales of natural and synthetic iron-oxide pigments were reported from eleven states. More than one-third of the tonnage sold was from six plants in Pennsylvania. Illinois, Ohio, and Wisconsin, as a group, ranked second in total sales.

Magnesite Crude magnesite production in the United States decreased 24 percent in 1952 from 1951 (from 670,167 tons to 510,750 tons) according to reports by producers to the Bureau of Mines. The decline was mainly a consequence of a strike which closed most domestic iron and steel plants for two months or longer. Caustic-calcined magnesia and refractory magnesia sold or used by producers decreased respectively 24 and 10 percent. Dead-burned dolomite sold by producers in 1952 was only 2 percent below the quantity sold in 1951 because the increased demand by plants producing primary magnesium approximately balanced the decreased consumption in basic open-hearth iron and steel plants.

Slate The domestic production of slate in 1952 continued the downward trend that characterized 1951; total production was 739,640 tons valued at $12,706,651, representing a decline of 10 percent in quantity and 13 percent in value.

Of the major uses, roofing slate suffered the most serious decline—down 30 percent in value to $3,067,513. Sales of flagstones, stepping stones, and related products made small gains. Production of granules and flour totaled 593,390 tons valued at $6,119,847—a decline of 8 percent in quantity.

There were 70 slate producers in 1952—7 less than in 1951. They were distributed by states as follows: 21 in Vermont, 20 in New York, 18 in Pennsylvania, 5 in Virginia, 2 in California, and one each in Arkansas, Georgia, Maine, and Maryland.

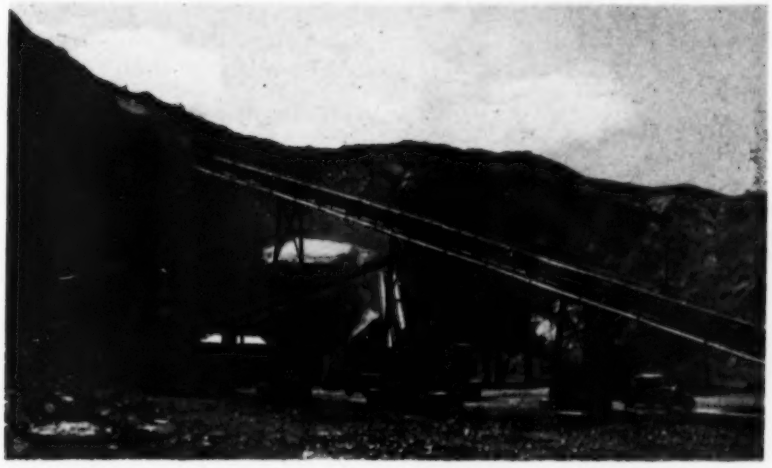
Graphite Mine production of crystalline and amorphous graphite totaled 5,606 tons in 1952, compared to 7,135 tons in 1951, representing a decline of 21 percent. Production was reported from three mines—one each in Alabama, Texas, and Rhode Island.

Reports of consumers to the Bureau of Mines indicated that consumption of natural graphite in the United States for all uses in 1952 decreased 30 percent from that used in 1951. About half of the decrease was accounted for by the graphite used by foundries for coating the surface of molds, and the remainder was distributed proportionally among the many other uses.

The estimated world production of natural graphite in 1952 was 190,000 metric tons. This was equal to the estimated production in 1951, the highest annual production recorded since the peak year of World War II when an estimated 272,000 metric tons were produced (1943).

Blake Bros. Company
Erects Base-Rock Plant On Quarry Floor

Anson S. Blake, 84-year-old dean of the West Coast quarry industry, continues actively to direct the affairs of the Blake Bros. Company, which he still heads.



The crusher-run-base plant erected in the spring of 1953 on the Blake Bros. Company's quarry floor. Capacity is 150 t.p.h.

another ON THE SPOT report

By HARRY F. UTLEY

A pioneer producer of crushed stone in the San Francisco Bay area is the Blake Bros. Company of Richmond, Calif. Present-day operations at Point Richmond on the eastern shore of the bay have undergone considerable development since the quarry in the Franciscan sandstone was first opened shortly after the earthquake and fire of 1906 had ravaged San Francisco. The basic product of the earlier days was rip-rap, still an important yield of the quarry, while ready-mixed-concrete and asphaltic mixtures have been relatively recent additions.

The newest expansion at Point Richmond was made in the spring of 1953, when a crushing-and-screening plant to produce crusher-run-base material was erected on the quarry floor as an operation separate and distinct from the regular crushing plant downhill near the water level. The new base-rock installation has a capacity of 150 tons per day and turns out an unwashed 1½-in. top size material, blended as desired to meet specifications, as a cushioning course for heavy-duty roads, streets, airport runways, and the like.

Trucks make the short haul from the shovel to the Cedarapids 18- by 32-in. primary jaw-crusher, a 4-in. grizzly by-passing the undersize, all then being carried by a 30-in. by 200-ft. inclined belt conveyor to a scalping screen at the top of a tower. This custom-built double-deck unit rejects the plus 4-in. stone on the first deck to a Telsmith 3-ft. Gyrasphere crusher, the minus 4-in. plus ¾-in. on the lower deck going via Syntron feeder to another Gyrasphere crusher, this one 4-ft. in diameter and equipped with a fine bowl. Products of both reduction machines join the screen throughs on a belt for delivery to the final sizing structure. Here a Symons 4- by 16-ft. 2-deck vibrating screen separates the material into three general stockpile sizes — 1½, ¾, and ⅜ in. The largest sizes may return for re-crushing. A reversible belt beneath the in-line bins can blend the rock as required and deliver to a 2-compartment truck-loading bin, or the products can transfer to a radial stockpiling conveyor which is capable of building up an open-storage pile of 15,000-ton live capacity of separately-sized stone.

A new Fairbanks truck-scale has been installed in the quarry exclusively to weigh out shipments from the new plant. All operations are centrally-controlled, and dust generated at various points in the circuit is reduced by water sprays.

(*Continued on page* 133)

The reversible belt beneath the storage bins can deliver to the truck-loading station or to the stacker belt.

Forgotten Deposit Now Supplies New Silica Sand Plant

Here a shovel is developing a quarry in the 60-ft. vein of sandstone which supplies the Marion Silica Company's plant near Marion, Ky.

ONE of the newest nonmetallic-minerals-producing operations in western Kentucky is the silica sand plant of the Marion Silica Company near Marion, Ky. This modern plant went into production early in 1953 with a capacity of 12 cars daily of high-grade sand. The history of the deposit, however, goes back to 1893, when a local resident took some of this sandstone to the World's Columbian Exposition. It was awarded a blue ribbon as the purest and best grade of glass sand. This deposit was then apparently forgotten for 60 years until 1952, when N. H. Bogie purchased 200 acres of land and began laying out the plant. Fabrication and construction was begun in October, 1953, using local labor entirely. Two grades of sand are now being produced—70-mesh and 90-mesh—and shipments are being made to glass works and other users of silica sand.

Work was also begun on the development of the 60-ft. vein of sandstone. Wagon drills are used in the quarry, and shooting follows standard practice. A shovel loads the broken material into Ford trucks which haul it 2,000 ft. to the plant. The trucks dump onto a 3- by 10-ft. Diamond Iron Works apron feeder which is followed by a bar grizzly with 2-in. openings. The oversize goes to a 20- by 36-in. Eagle Crusher Company jaw crusher which reduces to 2-in. minus. This crusher is driven by a 75-hp. Fairbanks-Morse motor. The crusher product and the material through the grizzly are carried on a 30-in. by 72-ft. belt conveyor to a 4- by 8-ft. Diamond 2-deck vibrating screen. The oversize from this screen drops into a 40- by 22-in. Diamond smooth-roll crusher, driven by a 100-hp. G. E. motor, which reduces to ¾-in. minus. This material, with the fines from the screen, is carried on a 24-in. by 159-ft. belt conveyor to a 20-ft. dia. by 36-ft. high raw-material storage silo which has a capacity of 100 tons. This silo is made of Armco 10-gauge standard tunnel liner plates and is on a concrete foundation.

A Syntron Vibra-Flow feeder under the silo discharges the raw material on a 24-in. by 20-ft. belt conveyor, followed by a 24-in. by 62½-ft. conveyor which discharges it on a 4- by 10-ft. Productive Equipment Corporation Gyroset 2-deck vibrating screen having 10-mesh cloth on its bottom deck. All material over 10-mesh goes to a 30- by 18-in. Pioneer smooth-roll crusher which is operated closed, with the two rolls in contact with each other. This crusher is driven by a 75-hp. Reliance electric motor. The minus 10-mesh dry material from the screen and the roll crusher is carried on a 24-in. by 80-ft. belt conveyor to a 4-paddle sand washer, 6-ft. wide, 12-ft. long, and 3 ft. high, over a 54-in. dia. by 35-ft. long Colorado Iron Works Akins single-screw, high-weir type classifier. Water is added to the dry sand at the washer at the rate of 1800 g.p.m. from a 2-in. pump line and at the classifier through two 2-in. lines. Water, containing clay and some iron oxide, is discharged from the classifier over the adjustable weir and through a pipe to a waste pond.

The sand is discharged from the classifier onto a 24-in. by 100-ft. belt conveyor. Adjustable scrapers are used to feed onto three stockpiles as desired. This is the pre-drain area, and material is left in the piles at least 24 hours for draining before being reclaimed for further processing.

This view of the plant shows the primary conveyor from the primary crusher to the scalping screen and the secondary roll crusher; also the raw-material storage silo (left).

Another view of the plant, taken from a higher point, shows the sizing screen, the final roll crusher, the rotary drier, the washer and classifier, and the finished product storage silos.

A 1-cu. yd. front-end loader mounted on an Allis-Chalmers HD5 tractor loads the sand from the piles into a 15-ton hopper under which is a 30-in. belt-type feeder. An 18-in. by 32½-ft. belt conveyor carries the sand to a 6- by 60-ft. York rotary drier. This is direct-fired with natural gas through a National Airoil No. 2½ tandem combustion unit. Air is provided by a 50-in. Phelps Model R fan rated at 12,000 cu. ft. per hr. The drier is vented through a 2- by 24-ft. steel stack and is driven by a 15-hp. G. E. motor.

The hot, dried sand is discharged into a 9-in. screw conveyor, which is water jacketed for cooling, and is fed to a 60-ft. vertical, centrifugal discharge bucket elevator. This in turn discharges to two Universal double-deck screens on top of the finished product silos. The finished sizes of sand are discharged by gravity into the three silos, which are made of Armco steel tunnel liner plates which measure 16 ft. in dia. and 30 ft. high. Sand is reclaimed through five gates under each silo onto a 24-in. by 51-ft. belt conveyor. A 20-ft. bucket elevator discharges the sand through two 4-in. flexible pipes into box cars or covered hopper cars for shipment. A 20-car spur track connects with the Illinois Central Railway.

Wash water for the plant is provided from a large U-shaped pond near the plant. The waste water from the sand classifier is discharged through a pipe into one leg of the pond. Near the end of the opposite leg is an 87-ft. well, operated by a Lancaster multi-stage jet pump, which takes clear water from the pond through an underground pipe. Two centrifugal pumps in the pump house—a 3-in. and a 4-in.—serve the plant.

Officers of the Marion Silica Company are as follows: N. H. Bogie, president; J. B. Alexander, vice-president; Dudley Payton, second vice-president; and R. H. Holland, secretary-treasurer.

Blake Bros. Co.

(*From page* 131.)

No article on any phase of the operations or management of the Blake Bros. Co., however, could possibly be written without some reference to the most interesting and distinguishing feature of the organization — its 84-year-old president, Anson S. Blake.

Despite his years, Mr. Blake still puts in a day's work, five days a week, in the active direction of the business from his 47-year-old roll-top desk. Erect in posture, firm in gait, his familiar figure may turn up any time and any place on the 200-odd acres encompassing the operations. A native San Franciscan, Mr. Blake had a grandfather who invented and patented the so-called Blake-type crusher nearly a century ago; so his interest in crushers is doubtless inherited.

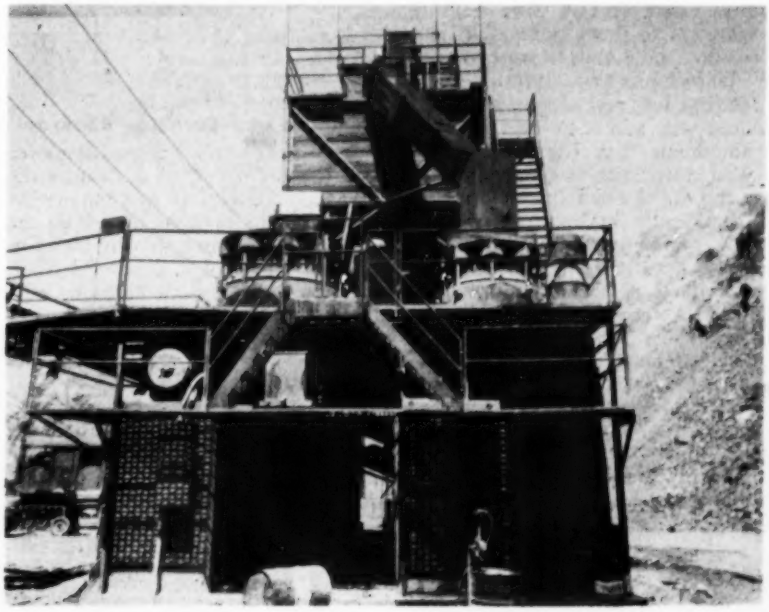
The operation began as the San Pablo Quarry Co., which Mr. Blake helped organize in 1906, and became the Blake Bros. Co. in 1914. Three of the men who were associated with Anson Blake when the transition took place are still with the company. Henry C. Steinbeck, now vice-president, was a messenger boy back in 1906. Gustav Kuppe, secretary-treasurer, joined the company in 1909, and Superintendent John Asmussen endorsed his first pay-check back in 1910.

Sale of Loomis Talc Corp. To International Now Final

The purchase of the W. H. Loomis Talc Corporation, holdings at Emeryville and Fowler, N. Y., by International Talc Company, Inc., Gouverneur, N. Y., became official with a statement by S. W. Tuttle, vice-president of International.

This deal will enable International to produce a greater variety of talc and discontinue plans to expand the present plant capacity, according to the statement.

Purchase price was not revealed, and as yet there has been no statement on sale of the Loomis company building in Gouverneur.



The scalping screen and the two secondary crushers which prepare the stone for screening.

Report on Current Labor Developments

By S. HERBERT UNTERBERGER
Industrial & Labor Economists
Washington, D. C.—Philadelphia, Pa.

Narrowing Differentials Create a Problem

A PROBLEM which has been in the making for ten years has recently come forward to annoy, disturb, and even plague many employers. It is the problem of narrowing differentials between the rates paid to the highest skilled employees in an establishment and those paid to semi-skilled or even unskilled workers.

The Bureau of Labor Statistics reports that late in 1952 and early in 1953 skilled maintenance men averaged about 37 percent above men janitors. As recently as 1945-47 the difference was 55 percent and for earlier periods the percentage was 65 in 1937, 80 in 1931-32, and 105 in 1907.

What has created this phenomenon? Primarily, the tendency to give dollars and cents across-the-board wage increases, a trend which has been intensified in the post-World War II succession of wage increase rounds. Every time both the least-skilled low-paid workers and the most-skilled high-paid workers receive the same cents-per-hour increase, the percentage differential narrows.

Until relatively recently the skilled workers did not complain loudly about this situation, although there was real evidence that they resented the lost status which these narrowed differentials implied. Some employers, too, were becoming increasingly concerned about the problem, particularly when workers were refusing promotion to more responsible jobs because "the small increase in pay wasn't worth it."

Except for certain companies and unions who had a specific policy of maintaining the differentials of skilled crafts, such as the steel industry and the closely related aluminum industry, little was done to arrest the trend toward narrowing differentials until this year. In this connection, the Bureau of Labor Statistics reports: "A tendency to readjust occupational differentials by granting added or larger wage increases to skilled workers has recently became widespread. An outstanding example is, of course, the provision of additional 10 and 20 cents hourly pay increases to various groups of skilled workers in the automobile industry—a practice by no means confined to this industry. It is estimated that approximately one-third of the wage settlements since the end of wage stabilization in February, 1953, were of such a character as at least to maintain skill differentials."

Since this report was prepared, the percentage of wage settlements designed to maintain skill differentials has risen to more than 40 percent. This is in contrast to the 1949-50 level, which was around 20 percent.

This request for wider differentials for skilled classifications appears to be shaping up into trend. Forward-looking employers are anticipating this demand and determining their policy in relation to it. As a measure of whether the differentials in a particular establishment are broader or narrower than the average, the following data reported by the Bureau of Labor Statistics for various important cities should serve as a guide. The figures represent the percent by which average straight time hourly earnings of designated occupations exceed average straight time hourly earnings of men janitors.

City	Stationary Engineers	Machinists	Electricians
Boston	45	41	41
Providence	30	40	36
Buffalo	31	34	33
Newark	39	42	41
New York	55	50	52
Philadelphia	37	42	43
Atlanta	n. a.*	59	50
Baltimore	44	54	44
Dallas	49	45	48
Memphis	53	53	55
Chicago	45	49	46
Cleveland	39	36	35
Kansas City	42	36	36
Milwaukee	40	40	42
Minneapolis, St. Paul	39	40	43
St. Louis	50	55	48
Denver	52	41	38
Los Angeles	36	43	41
Portland, Oreg.	36	36	29
San Francisco	30	38	38

*n. a. — not available

Hours and Earnings Records

A worker who is suing an employer for penalty payments due under the Wage and Hour Law may require the employer to provide him with the evidence necessary to win his case. This is the effect of a recent decision in which the Federal District Court ruled than an employee may inspect the original records dealing with the hours worked and the pay received by him. The court believed that access to these records was necessary for him to perfect his claim.

However, the court denied the request for access to a great many other records such as ledgers, sales registers, other books of account, insurance policies, vouchers, and cancelled checks. The employee wanted to see them, ostensibly, to establish that his employment was associated with interstate commerce. Here the court told him to try to establish this point first by interrogation of the company's officers and employees before it would grant authority for the inspection of such further records.

Time Study Data Available to Union

As the area of collective bargaining broadens, the National Labor Relations Board and the courts have been increasing the matters on which employers are required to provide information to unions.

Thus far, employers have been required to supply detailed information concerning wage and salary rates, job classifications, rate ranges, merit ratings, and pay increases. Until recently there was still uncertainty about how much information on incentive rates and the time studies on which they are generally based had to be turned over to the union.

Now, however, the United States Court of Appeals has given an answer which is likely to be the rule for a long time to come. With a large and increasing number of plants on incentive rates, the effect of its ruling will be widespread.

This court stated that it is the employer's duty to furnish to the union the time-study which he used in establishing the work standards. However, he is not required to open his plant to union representatives to enable them to make independent time studies.

Custom Grinding Service Announced for Pilot Work

The establishment of a new custom grinding service for industry has been announced by the Majac Engineering Company, Blawnox, Pa. Designed for pilot work for large volume, and for processors whose volume does not warrant installation of large commercial pulverizing equipment, the service includes complete laboratory and testing functions, if necessary, prior to volume production. Two Jet pulverizers of the concern's own manufacture are used, with a total capacity of 4,000 lb. of material per hour.

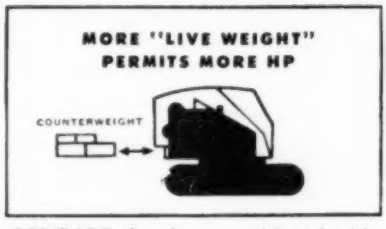
The equipment is suitable for reduction of a wide range of materials including limestone, clays, graphite, feldspar, alumina, coal, iron ore, plastics and chemicals. In addition it is used for exfoliation of many fibrous materials such as wood pulp, asbestos, and mica. Pulverization of solid materials claimed to be finer than by any other existing method is made possible by the Jet equipment. Precise control of fineness is obtained, as well as exact particle size distribution or concentration of the end product into various predetermined percentages of different micron sizes.

Before you buy:

COMPARE NET HP!

This LS-85, despite tough, big-chunk rock, has been operating over 1200 hours without requiring one replacement part!

Don't judge available power by engine model only ... NET hp is what adds up to extra profit!



COMPARE shovel-cranes with and without counterweight. That test spotlights the size, weight and heft built into the working parts and structural members. You'll find the LS-85 has more "live weight" than comparable ¾-yard shovel-cranes.

Greater net horsepower assures faster, deeper digging. Bigger loads are handled without stalling. For example: the diesel driven heavy-duty ¾-yard LS-85 packs 92 net hp. That's more power than comparably-sized competitive rigs can safely use. It's why the LS-85 has more digging force behind its bucket teeth . . . why it cuts so smoothly . . . hoists and swings without a pause.

Use of greater net hp is practical because of all-welded, stress-relieved construction *and extra "live weight."* This *extra live weight* is in heavier, sturdier working parts and structural members—rather than a heavier counterweight. All this means year-after-year service and low maintenance costs. So whatever you do, don't compare power by the engine model only—CHECK *NET* HP.

For more facts on the LS-85, ask your distributor, or write for Catalog 2317. For the complete line, request Catalog 2373.

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A Crushed Stone Superintendent's View of Safety*

By CLARENCE F. STETSER
General Superintendent
New York Trap Rock Corporation

IT is my intention in this paper to tell you about the safety program in our plant, supplemented with my own views of how best to carry out the program. I mention this because no matter how elaborate a safety program may be, it cannot be successful unless it is properly controlled.

First of all, I would like to explain the operation of our plant, along with the safety precautions we use. Beginning with the well drilling, our men are provided with all the ordinary safety gear. This includes hard hats with liners for winter and chin straps to prevent the wind from blowing the hard hats off. The liners and chin straps eliminate two well-known excuses for not wearing hard hats.

Safety shoes are worn by all our well-drilling men; in fact they are worn by all our men with the exception of truck drivers. To date, we have not tried to sell them on the idea since our records do not indicate the necessity for truck drivers to wear safety shoes. I might hastily add, we do not discourage the drivers from buying safety shoes if they want them. We keep a supply of safety shoes in our storeroom, allowing all employees 25 percent off cost price; that is, the company assumes 25 percent of the cost of safety shoes, plus handling charges.

Gloves are provided to all our employees on an exchange system which has worked out fairly well. We found it necessary a few years ago to put a rule into effect that for an employee to get a new pair of gloves it was necessary for him to turn in his old gloves to his foreman. His foreman would then turn in the old gloves to the storeroom keeper, along with a signed requisition for a new pair. Gloves which are not too badly in need of repair are sent off for dry cleaning, and the rest are destroyed.

To promote the use of safety goggles, we supply prescription safety goggles to all employees who need corrective glasses, the company assuming the cost of the doctor's examination, as well as the cost of the safety goggles. We keep a supply of regular safety goggles in our storeroom for all our employees. The only requirement to get a pair is a requisition from the employee's foreman. I am happy to say our men wear their hard hats, gloves, and safety goggles very conscientiously. Regular linemen's safety belts are supplied to each machine and are worn by the well-drill operators or helpers whenever they have to climb up on the machines for repairs, adjustments, or greasing. They are *required* to wear safety belts whenever they climb the well-drill derrick mast.

We have installed a safety interlocking switch at each well-drill power pole which prevents the men from plugging in the cable when the power is on. The switch has to be in an "off" position before the connection can be made or broken.

The lock-out system has been provided for the main line switch for the electric motor, so that the power motion can be locked in an "off" position whenever adjustments or repairs are to be made. This system, I am sorry to say, was adopted after we had a very serious accident on one of our drills when the operator and helper misunderstood one another's signal. The lock is kept securely fastened to a piece of light chain that is long enough to reach the switch when needed. We have found by securing a lock on each machine that its loss or disappearance is prevented and that it is available when needed.

Because of our night operation of well drills and their somewhat distant location from each other, as well as from other parts of the plant, we have provided a unique warning device which you might be interested in knowing about. Each well-drill machine is provided with a Very pistol loaded with a parachute-supported red flare. This Very pistol is a device used by all branches of the armed services. To summon help in case of an emergency, the flare is shot into the air. To point out the exact location where help is needed, the operator or helper after shooting off the flare sticks into the ground near the edge of the quarry bank a long-burning red flare similar to those used by over-the-road truckmen. Fortunately, we have never had to use this equipment. I neglected to inform you that the Very gun and flares are in a steel box mounted inside the motor house of the well-drill machine.

Following the primary drilling comes the blasting. We are fortunate in having our top management approve and insist on the use of the safest blasting agent known to the trade at this time, and I am sure that if and when a safer explosive is made, we will be among the first to use it. Even with its inherent safety features, our men are trained to use this blasting agent as they would any other explosive and to adhere to all the safety rules we know of in handling, both in storage and in loading.

Our primary blasts are all of the delayed-action type, and with this Primacord is used in the holes. Two

*Presented at the 41st National Safety Congress, Cement and Quarry Section, Chicago, October 20, 1953.

Left: Well drillers wearing necessary safety gear, such as hard hats, chin straps, and safety shoes. Note that these men have the legs of their overalls tied near their shoes. Right: A well-drill operator equipped with a safety belt.

down cords are used in each hole in case one gets severed and the caps are attached at the very last part of the hook-up operation. After the wiring has been laid out, connected, and tested, an extra set of caps is fired, of course, at some distance from the Primacord in the holes. This procedure we call a dry run; it is a dress rehearsal of the real thing, giving us a test of the blasting switch and all of the wiring system. An inspection is made after this dry run to make sure all of the caps have been fired, and then another set of caps is made ready for final and last-minute attachment to the Primacord of the various holes.

In order to prevent a second cycle of the delayed-action switch, we have taken steps to interrupt both wires of the electric supply. This is accomplished by connecting caps to wires going to the delayed-action switch. These caps in turn, when fired, will detonate short lengths of Primacord around which the common wire and main source wire have been coiled. When the Primacord has been detonated, the wires are blown apart, thereby breaking these connections and making it impossible for the cycle of the delayed-action switch to repeat.

In connection with both primary and secondary blasting, a signal system has been installed consisting of signal lights, a sounding bell, and a siren. In the case of a primary blast, four blasts of the siren are sounded and a period of four minutes is allowed for proper clearance of personnel before the shot is fired. After a reasonable time (following the detonation) one blast of the siren is sounded, which denotes the all clear signal. For secondary shots, three blasts of the siren are sounded and a three-minute interval is allowed before the shot is fired.

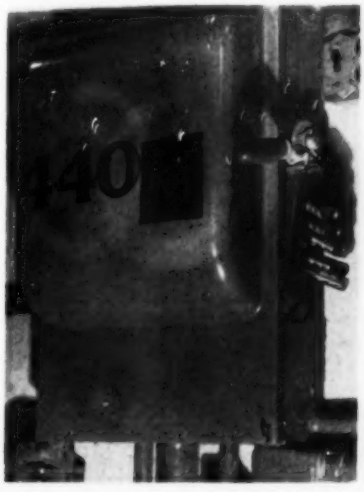
The signal lights and the loud-sounding electric bell which rings continually during the waiting period of each shot of both primary and secondary blasts are so situated on the main road as to stop all traffic to the quarry at a safe distance from the blasting areas. This blasting signal procedure is the same in all our plants.

Continuing progressively through the plant operations, we come to the loading of the haulage units. This is done mainly by large mechanical shovels powered by electricity. The main source of power is carried to these machines by portable trailer cables carrying 2,300 volts. In keeping with the peculiarities of the operation and for economic reasons, we have adopted the use of four separate single conductor cables of equal-value insulation and cross section instead of one multi-conductor cable, which I understand is more generally used.

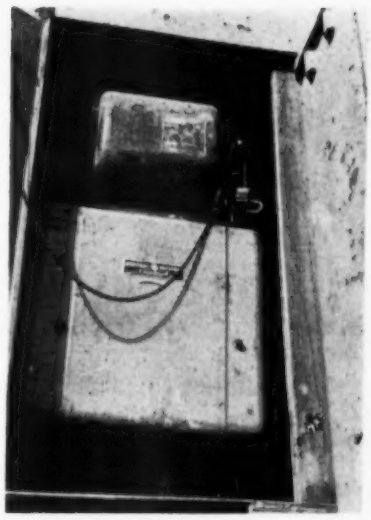
These cables are some 700 ft. in length to allow frequent and lengthy moves by the shovels without requiring a move of the cables to a new power outlet. Of the four cables, three are used for the power, and the fourth is a grounding conductor which is attached to the metallic parts of the shovel and also to a network of overhead and underground grounding conductors at each pole outlet. . . .

The shovel crews are provided with metallic hooks having wooden handles, the metallic part being covered entirely with a rubber hose. These hooks are required to be used whenever the cables have to be moved. Approved rubber gloves are also provided. The shovel operators are protected by wire screen shields to keep out flying particles while handling the rock. These screen shields are supplemented with Plexiglass windows during inclement weather. Except for very unusual conditions, the shovels are digging in relatively low piles of broken stone. This definitely adds to the safety factor of this operation. Whenever climatic or other conditions cause a part of a bank to stand up very high, all means of correcting this condition are taken. Shovel crews are trained to report any unsafe condition and are allowed and encouraged to move their machines to safer locations.

In loading the semi-trailer hauling units at the shovel, the drivers are required to leave the cab and move to a safe distance, clear of the possibility of being hit by falling



Lock-out devices for multiple locks on a switch. This system is used throughout New York Trap Rock plants.



Lock-out system on a well-drill main switch.

or flying stone. In turn, the shovel operators are required to allow the drivers ample time to get into the clear before swinging the bucket over the trailer. Continuous effort is made by the pitmen and road patrol personnel to keep the roads clear of fallen pieces that may cause drivers to have accidents with the trucks; but in spite of this precaution, mishaps occur. The main roads where traffic is heaviest are wide enough to permit passing vehicles a maximum distance of separation to prevent accidents due to stone falling off trucks. This is particularly important on curves.

Secondary drilling is inherently a hazardous operation. Every effort is made to provide the maximum safety for these workers so far as surroundings are concerned. Drillers are provided with hard hats, safety shoes, gloves, and eye shields; and here again, I am happy to say, the men use them very conscientiously, and our experience has been very good.

Our need for secondary reduction has been very much relieved by our business in rip rap. Here again is a fairly hazardous operation. However, our use of the four-pronged grab hook has greatly reduced the hazard by eliminating the need for hand work. This operation, in the quarry, is handled entirely by crawler-type cranes manned by crews that have been trained in a rigid inspection routine of the equipment and required to report any bad conditions. Special trucks have been designed for handling this operation at the face and into storage areas. These trucks afford the drivers the maximum of protection in loading and especially in dumping their load of rock.

A portable concrete shelter is used for primary blasting. Note the blaster's hard hat.

Since we are speaking of dump trucks, this would be a good time to cover the other operations for these trucks. A good majority of all dump-truck service involves backing the trucks into some precarious position. The drivers are encouraged to report any mechanical faults in their trucks to the maintenance men, who correct them as soon as possible. A proportionate number of spare units will always combine to make a safer as well as a more efficient operating program. Here again, safety and operating efficiency go hand in hand.

At the primary crusher the men are provided with suitable guard rails and other mechanical devices to provide safety, as well as the regular personal protective equipment. Throughout the mill buildings and other work areas the mechanical protective devices and guards are absolutely necessary, and we have spared no means to make and keep this condition proper. Every lubrication point has been studied, and every effort has been made to make it safe and efficient. All conveyor belts have been studied to locate any hazards and to guard them properly. All tail pulleys—and these are not generally considered hazardous—have been amply guarded and protected. All under- and over-passes have been provided with proper stairways, hand rails, and head-room protection.

The pinch points of belts and pulleys have been considered as hazards. Many of these have been properly protected, and there is a continuous program of work to complete this project and to eliminate all such hazards.

Although noise is not generally considered hazardous in some states, we have provided our men who work near vibrating screens and crushers with approved ear plugs which have been developed by the Air Force.

In the realm of maintenance and repairs there are many ways to improve the safety of the workers. Modern hand tools and equipment will greatly contribute to this improvement. My attention has been attracted by the many modern devices for lifting and jacking. These devices not only make for safer working conditions but also go hand in hand with efficient production. We are fortunate in our plants to be well equipped with overhead traveling cranes in most buildings where heavy machinery is handled. This is an area where proper training of workers in the methods of slinging and rigging will eliminate many accidents and the always possible personal injury.

The use of degreasing solvents for cleaning parts whenever machinery is being dismantled and repaired is one which needs careful study and consideration. Much can be learned in the study of the modern trends in connection with these solvents. We have discontinued the use of gasoline and have made every effort to put into use the modern solvents. However, we must be forever on guard to prevent the use of other unsafe solvents. The effects of many apparently approved solvents may depend on the reaction of the user.

For moving these four power cables leading to electric shovels, an insulated clamp and an insulated hook are used.

The use of electricity, it goes without saying, is practically universal. This is another considerably hazardous area. Our workers in this department are well trained, are given every opportunity to work safely, and are encouraged to take no unnecessary chances. We have found that it is poor policy to allow unqualified persons to conduct electrical work. Especially is this true in replacing fuses in electric circuits. We allow no one to do it *but electricians,* and even they must be trained in the proper procedure.

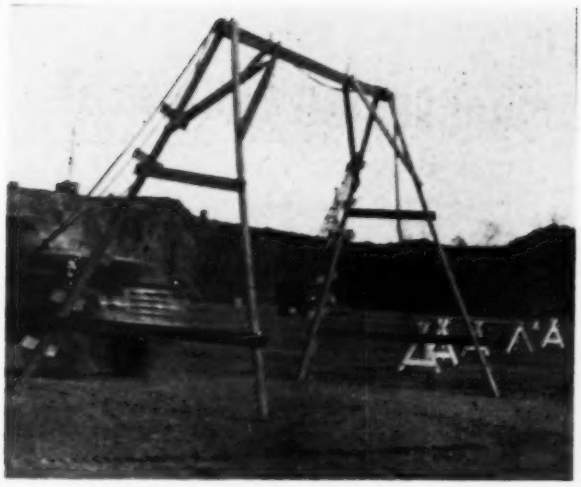
In maintenance work on conveyors there is always the danger of wrong signals and misunderstanding orders. This is especially true where quite a few workers are involved with the same machine, such as belt repairmen, pulley and idler repairmen, chute repairmen, and electricians, all working on the same machine.

We have adopted and used a little device which provides for the multiple use of locks to lock out the main switch for the power source. This device provides for the use of several locks on the same electric service at the same time. All of the locks have to be removed before the switch can be closed and the machine operated. All safety switches made and in use today are provided with facilities for locking out the service; and at all switches where heretofore we could not apply locks we have taken steps to install the proper facilities so that the lock-out system can be used.

There are many installations involving automatic starters with pushbutton control where the lock-out system would seem to be difficult to apply. However, with the application of a little ingenuity some simple and inexpensive device can be added to suit a lock-out system.

As much as we try to guard against accidents, we still have them; and for this reason we have adopted a system of training a First Aid corps under the direction of the U. S. Bureau of Mines. This corps is selected to include men from all areas of activity, so that we have a good cross section of personnel available for all emergencies. These men are given a refresher course each year. We encourage and require all workers to report to the office any and all injuries, however slight. Emergency First Aid stations have

A closeup of a small wooden horse used to support electric cables. Note the hook for moving the cables.



A large wooden horse supports electric cables over the roadway. Note the good housekeeping condition of the quarry floor.

Plexiglass windows in the shovel cab protect the operator against flying stones.

been strategically located around the plant.

Up to this point I have tried to explain briefly the mechanics of our operation, along with some of the safety devices and safe practices we employ. I will now discuss with you, since we still have accidents, what we do to try to correct the conditions which cause the accidents and why the accidents occur.

We have in our plant a safety committee, consisting of all foremen, union stewards, the assistant superintendent, and the superintendent, which meets on the second Tuesday of every month at 1:30 p.m. This meeting is conducted by our safety director. Generally, the first thing is a discussion of the accidents we have had since our last meeting. All accidents that cause an injury are reported on an accident investigation form made out by the foremen in charge of the department where the accident occurred. Each accident is discussed to see if everything has been done to correct the condition which caused it. . . .

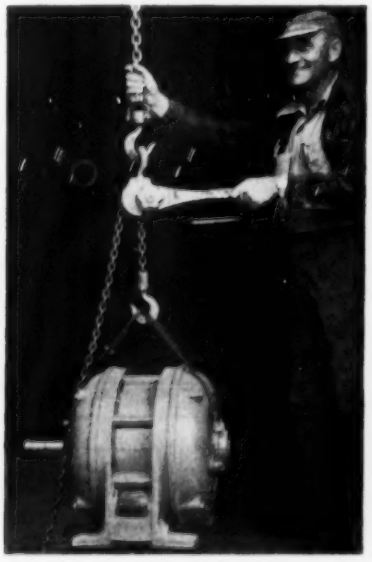
After the review of accidents we have a report from the plant inspection committee, along with suggestions made by our employees to their foremen. If these suggestions are approved by the safety committee and the superintendent, the secretary of the safety committee completes a form which includes the recommendations. This form is made up in duplicate and placed on the superintendent's desk. It is directed to the attention of the foreman in charge of the department where the recommendation is made, authorizing the foreman to complete the recommendation. The form is signed

(*Continued on page* 146)

Wooden horses are used by blasters for stringing blasting wires over electric cables.

For loading rip rap a specially-designed four-pronged hook is used.

A view of the safety interlocking switch, used when extension cables are necessary for well drillers. This type of switch is on each power outlet well-drill pole.



Simple modern lifting devices like the one shown here contribute greatly to safety.

Eagle PROFIT-PROVED AGGREGATE PROCESSING EQUIPMENT

IS "DOING THE JOB" FOR

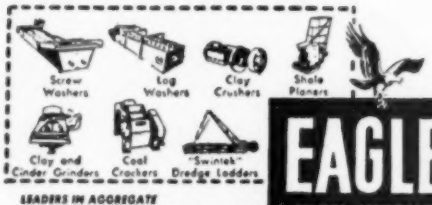
E. G. DeLia & Sons Construction Co.

NORTHVILLE, N.Y.

Heart of the busy DeLia aggregate processing plant is shown at right—an Eagle Water Scalping Tank with dual compartment collecting-blending flume below it, which feeds retained material to an Eagle Double Screw, long weir Washer-Classifier-Dehydrator. The 20' Water Scalping Tank with dual compartment collecting-blending flume, removes excess water and provides preliminary classification—the Eagle double 24" x 22' screw unit washes the material, retains the desired fines and dehydrates the material.

Eagle Washing and Classifying Equipment at DeLia's plant assures a blend of the required meshes of sand to meet New York State concrete sand specifications. Plant averages 125-tons per hour.

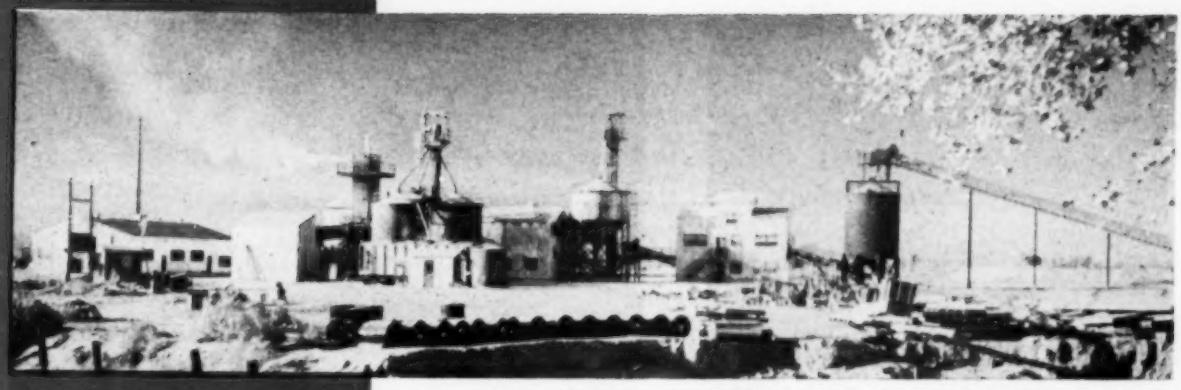
Sand Washing and Classifying Equipment is our business—and has been for a long time. Our experience, based upon hundreds of Eagle installations in all parts of the country, can be of great help to you—no need for any producer to be a "guinea pig"—Eagle has the answers. WRITE FOR LITERATURE.



LEADERS IN AGGREGATE WASHING AND CLASSIFYING EQUIPMENT FOR HALF A CENTURY

EAGLE IRON WORKS

133 Holcomb Ave., Des Moines, Iowa



A general view of the new fluorspar-flotation plant of Kaiser Aluminum and Chemical Corporation at Fallon, Nev.

KAISER *Produces Fluorspar* for own aluminum plants

By HARRY F. UTLEY

* * *

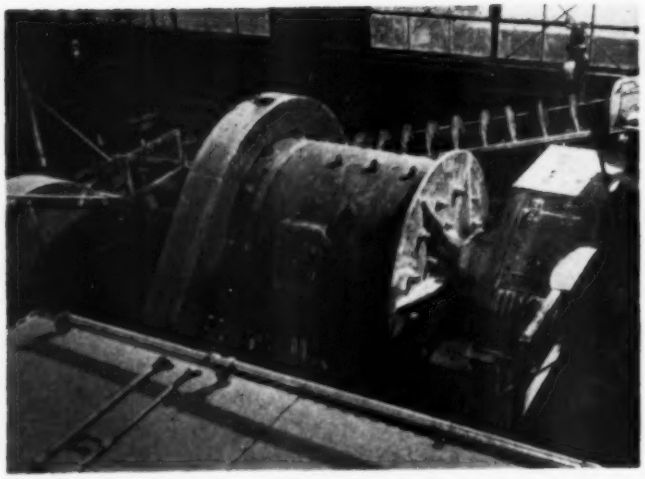
another ON THE SPOT report

THE Kaiser Aluminum & Chemical Corporation has assured itself an adequate supply of an important raw material vital to the reduction of primary aluminum by its purchase and development of the Baxter fluorspar mines near Gabbs, Nev., and by the erection and operation of a modern fluorspar flotation plant at Fallon, Nev. The acid-grade spar concentrate made at Fallon is shipped by rail to General Chemical's plant near Pittsburg, Calif., where it is finally converted to aluminum fluoride, necessary to control the acidity of the electrolyte in the potlines of the Kaiser aluminum-reduction plants.

Initial steps were taken nearly two years ago when the Baxter workings were acquired from the Gould interests. The Baxter, worked by shrinkage stoping, had been developed on four levels to 400 ft. before acquisition and has now been opened to the 600-ft. level by the Kaiser organization. Eimco 12B Rocker-shovel, slushers, electric locomotives,

Above: The skip, truck-loading bins, and other surface features of the Baxter mine near Gabbs, Nev.

Right: Ore cars being loaded at one of the lower levels in the Baxter mine.

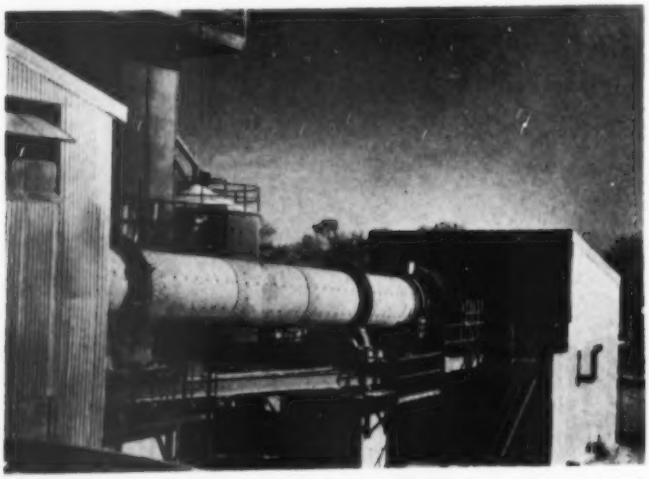


Above: The 5- by 5-ft. ball mill and the screw classifier which handles the mill products before it goes to the conditioner.

Left: The grizzly and the 10- by 20-in. primary jaw crusher which reduces spar ore to about minus 1-in.

Two identical 8-cell flotation machines make up the rougher (left) and cleaner circuits in the flotation department.

Plunger pumps (right)) advance the pulp from the thickener to the 4-ft. diameter by 3-ft. long drum filter seen at the left.



The 5-ft. by 50-ft. rotary cooler, looking toward the discharge end. A part of one of the concentrate storage tanks may be seen just beyond.

A view in the Fallon plant laboratory. Six automatic samplers at strategic points in the plant flow sheet assure constant product quality.

and cars are employed on the lower levels, and the ore is hoisted by skip to a truck-loading bin at the surface. In addition to the ore mined at the Baxter workings, the company is encouraging custom-ore production by several small, independent miners in western Nevada as an added source of supply for the Fallon plant.

Trucking of the calcium-fluoride ore from the mine near Gabbs to the Fallon plant, a distance of 73 miles, is contracted, the three units in regular service each carrying about 20 tons per trip. The trucks run five days a week to keep the plant amply supplied with raw material. Ore runs from 35 to 55 percent CaF_2, andesite being the chief gangue constituent. The ore is crushed and screened at the mine to about 1¾ in., with varying amounts of 1¾- to 10-in. hand-sorted lumps included. It is dumped directly from trucks to a 30-ton feed hopper as required or stored in the open in piles. A Hough Payloader reclaims from the piles when necessary.

The Fallon plant is modern and of all-steel construction with aluminum sheeting. The layout was drawn by Western-Knapp, while Kaiser Aluminum forces did the detail design and construction. Present mill capacity is about 110 tons daily.

Approach to the plant is *via* an earthen ramp. A Stephens-Adamson 30-in. by 6½-ft. reciprocating-plate feeder at the bottom puts the ore on a 24-in. by 160-ft. belt-conveyor which carries it to a 200-ton steel surge bin. A similar feeder below the surge bin supplies a 24-in. by 35-ft. belt fitted with a Stearns 24- by 24-in. magnetic head pulley. This short belt discharges the rock over a grizzly to a Pacific 10- by 20-in. jaw crusher, the minus 1½-in. product and grizzly undersize being elevated at an Overstrom 3- by 6-ft. vibrating screen, from which oversize passes to a Symons 22-in. cone crusher. The final product has then reached mill-feed size (minus ¼-in.) and is stored in another 200-ton bin. From the bin the ore is fed directly to a Denver 5- by 5 ft. ball mill by way of a 20-in. by 18-ft. feeder belt equipped with a Hartshorn "Trans-Weigh" recording unit. The device records the tonnage and indicates the rate of feed continuously by means of a strain gauge, weights being converted electronically to pounds which register on a Brown instrument on the operating floor.

The ball mill is in closed circuit with a Wemco 30-in. by 17½-ft. spiral classifier, from which the 85 percent-through-100-mesh product is pumped to a Wemco conditioner. Reagents introduced at this point vary with the grade of ore. Reagents now being used are oleic acid and patronate, which are heated and fed together. Sodium silicate and soda ash are added as conditioners.

From the conditioner the pulp goes to the flotation department, the rougher and cleaner banks each consisting of identical Denver Sub-A 8-cell, 32- by 32-in., No. 18 special flotation machines. More oleic acid is added at the rougher circuit; and cleaner tails carry less than 4 percent solids which are returned, primarily as make-up water, to the classifier. Since they are very dilute, they may not be returned to the conditioner or the rougher cells as they would lower flotation density too much and cause sanding in the cells. Following flotation, the concentrate is pumped to a Denver thickener, thence by a Wemco diaphragm pump to a Denver 4-ft. diameter by 3-ft. long drum filter. Some of the filter feed may be returned to the thickener if desired. Filter cake (8 to 10 percent moisture) is carried from the filter to the dryer by a Stephens-Adamson screw-conveyor.

The 5- by 50-ft. direct-heat, counter-current rotary dryer is oil-fired and exhausts through a Western Precipitation Multiclone collector. Product temperature as discharged is about 600 deg. F., and the dried concentrate is cooled by passing it through a double-flight Western Precipitation "Holo-Flite" screw conveyor, which utilizes cold water. Fresh-water requirements of the plant are 115 to 120 g.p.m., and are supplied from a well on the property.

The finished acid-grade (98 to 99 percent) fluorspar concentrate is stored in product silos filled by elevator and recovered by screw-conveyors for loading into covered hopper-bottom cars. Production of concentrate has reached 60 tons daily.

The Fallon plant is served by a branch of the Southern Pacific, and all shipments go to General Chemical's new plant near Pittsburg for conversion to aluminum fluoride.

Close laboratory control is maintained throughout processing at the Fallon plant, six Denver Type SL auto-pulp samplers operating in the circuit at the following points: (1) ahead of the ball mill; (2) ahead of the conditioners; (3) the rougher tailing; (4) ahead of the thickener; (5) following the cooler; and (6) just prior to loading the finished concentrate into the cars.

Main offices of Kaiser Aluminum & Chemical Corp. are in Oakland, Calif. Harley Phillips is general superintendent at Fallon; Walt Johnson is mill superintendent; and G. L. Frayser is chief chemist. Robert C. Kirchman is superintendent at the mine near Gabbs.

Monarch Cement Company Builds Shale Drying Plant

Work on a new shale dryer and crusher plant was scheduled to begin immediately on the floor of the Monarch Cement Company's quarry at Humboldt, Kans., according to local press notices. The new 185-ft. structure will be located near the general offices.

Glen Shook, Monarch construction engineer, stated that the new plant will replace present equipment which is out of date, too small, and in need of repair. He added that the new facilities will have a capacity of 100 tons of raw shale per hour and should double the rate of previous production.

According to Mr. Shook, the new equipment will reduce the high moisture content of the raw material (20 to 25 percent) to as little as 1 percent, in contrast to the old equipment's "erratic average of between 6 and 12 percent".

Shale will be fed to the new plant from 15-ton trucks—new units which will replace the railway formerly used. In the crusher the material will be crushed to the minimum size of ¾ in., then transported *via* conveyor belt to the rotary dryer, which is similar in appearance to the kilns of the main plant, and thence to a vibrating screen. After being sized, the fine material will be sent to storage and the coarse particles will be conveyed to a secondary crusher.

It is estimated that the construction of the plant will require nine or ten months. The building will be of concrete, structural steel, and asbestos siding.

P. T. Allsman Named Director Of Mines Bureau Region VII

Appointment of Paul T. Allsman as regional director of the Bureau of Mines Region VII with headquarters at Knoxville, Tenn., was announced recently by Douglas McKay, Secretary of the Interior. The appointment will be effective January, 1954. The post has been vacant since the death of Dr. Hewitt Wilson on November 25, 1952. In the interim Dr. Alton Gabriel and John R. Thoenen, successively, have served as acting director.

Mr. Allsman has been regional director of the Bureau's Region V at Minneapolis, Minn. In his new post he will be responsible for Bureau activities in Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Florida, Puerto Rico, the Virgin Islands, and the Panama Canal Zone, including experiment stations at Norris, Tenn., Raleigh, N. C., and Tuscaloosa, Ala., and field offices at Asheville, N. C., Jellico, Tenn., and Birmingham, Ala.

Mr. Allsman is the author of numerous Bureau of Mines publications and articles published in technical and trade journals.

WASHINGTON NEWS LETTER

another P-Q exclusive

THIS is the season when, normally, Washington comes alive. Congress returns, and decisions which have been postponed must finally be made. Budget requests must be put in order, and their proponents get up nerve to defend them before a generally hostile Congress.

Official Washington caught its last breathing spell right before the first of the year. The holidays provided the opportunity for a last trip out of town.

This year it's politics as usual—only more so because of the imminence of the congressional elections which will be the Eisenhower administration's first universal "test at the polls".

The congressional season is due to open the third week in December, when the President is scheduled to meet with congressional leaders to discuss his proposals. It is likely that he will be advised to "take it easy". With both houses of Congress practically evenly divided between Republicans and Democrats, no leader can assure what the vote will be on any issue. And as everyone knows, there is a further, and perhaps more serious, division within the ranks of the Republican party itself. As a result, controversial legislation will have a very tough time. Unfortunately, most of the matters on the agenda are likely to be controversial.

The agenda of every congress must include taxes. And here there is a ready-made controversy between Eisenhower and the members of Congress who are most influential on this issue. Last year, a last minute compromise was worked out, practically over the prostrate form of Dan Reed, the chairman of the House Ways and Means Committee. This year it is practically certain that Congressman Reed will again insist on substantial tax reductions well beyond the scheduled elimination of the excess profits tax and the 10 percent cut in individual income taxes.

And this year he is likely to get a great deal more support from congressmen who would like to go home and tell their constituents that they were responsible for the substantial tax reduction promised in the successful Eisenhower campaign.

The net effect is hard to anticipate, but around Washington it is being freely predicted that Dan Reed will get his way—at least partly.

The agenda of every congress also must include appropriations. The Eisenhower administration has learned, somewhat to its surprise, that there is no easy way to reduce appropriations—that, since the bulk of the appropriations which can be altered go into national security expenditures, the only way to reduce appropriations is to reduce security expenditures and thereby court the accusation of "playing politics with the nation's safety".

It looks as though the Administration would like to spend about as much as last year. But John Tabor, chairman of the House Appropriations Committee, is a handy man with a meat ax and he has been known to use it before on appropriations requests.

It is also difficult to anticipate what will be done about appropriations, but it is the opinion of some in Washington that John Tabor will get his way—at least partly.

In recent years, at least, it seems that the agenda of every congress must also include labor legislation. Here the Administration has so far postponed action. But in 1954 it is especially anxious to live up to the Eisenhower campaign promise to labor of a fairer Taft-Hartley Act.

It is practically a foregone conclusion that the 19 points for amendment of that Act which ex-Secretary Durkin claimed had been promised to him by the President will not all find their way into the proposed legislation; but some of them will. Most of these points relaxed many of the restrictions on labor unions.

The views of Representative Sam McConnell, chairman of the House Labor Committee, appear to be opposed to any relaxation of the rules now. He seems to be in favor of some tightening up, particularly on the operation of union welfare funds.

Here, too, it is not possible to predict what will happen, but in Washington circles the guess is that any amendment of the Taft-Hartley Act has no better than a 50-50 chance to get through Congress.

Then there is tariff policy. This is an issue which the Eisenhower Administration itself ushered onto the center of the stage. The British "trade not aid" program which the Administration generally endorsed requires lower tariffs to become effective.

There is a large and apparently growing opposition to any modification of present tariff barriers. The recent softening of the demand for most products will only serve to strengthen that opposition.

Congressional reaction will probably be "hands off" the tariff policy. While this may mean further requirements for foreign aid, Congress appears to be inclined to face that problem when it comes.

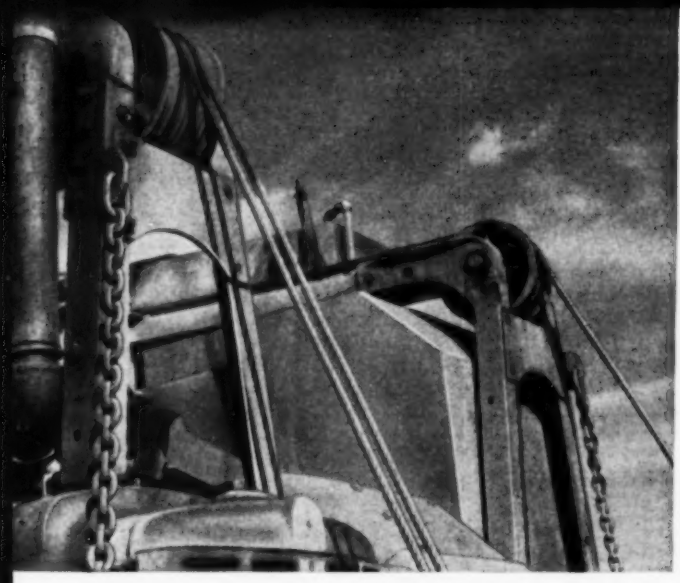
The representatives of our foreign allies in Washington are beginning to say that soon there will be neither trade nor aid. This fear that the United States may abandon them accounts, in large part, for the continuous need for shoring up the North Atlantic Alliance, which has a disconcerting habit of falling apart from time to time.

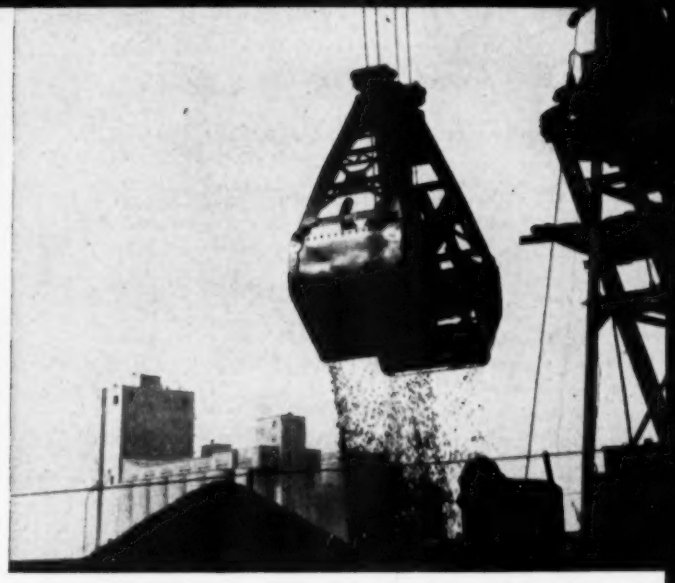
With regard to most of the matters considered so far, the Administration appears to be willing to go further than Congress. Only with regard to the farm policy does it appear that Congress wants to go further than the Administration.

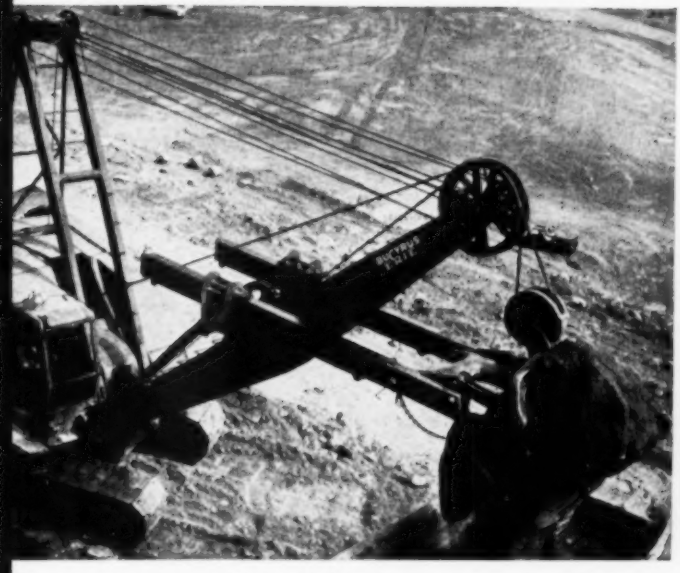
Fearful of retribution at the polls, most Congressmen are ready to give the farmers practically everything they want in the way of price supports. The Administration is still talking flexible price supports. On this issue all the predictions are that for the most part Congress will do what the farmer wants.

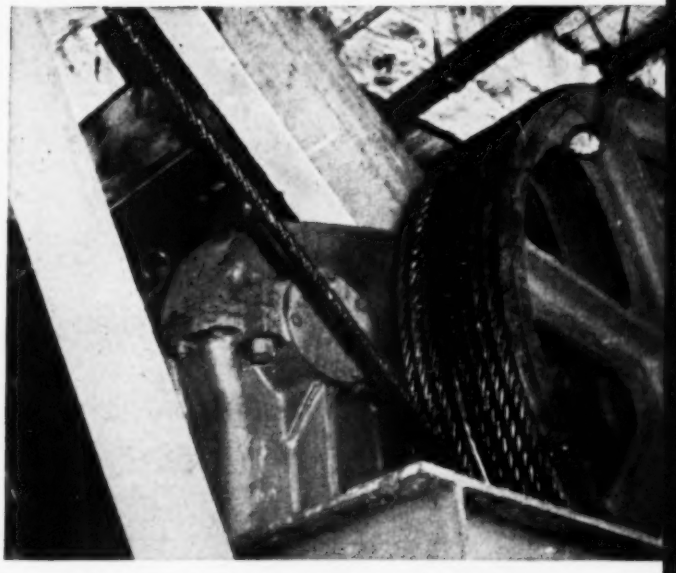
These are the fundamental issues which will engage most of the serious thought and serious work between now and the time when congressmen will turn to spending full time on their paramount task of getting re-elected. However, there is another activity going forward in Washington which is threatening to overshadow all these others. It is, of course, the great hunt for spies in the Truman Administration.

As a result of recent actions, Congress and the Administration are competing for honors in this field. While all but the most extreme proponents of the activity will insist that in comparison with the basic problems facing the nation, this is only a side-show, nevertheless, responsible officials are beginning to fear that the side-show may take over the main tent.









EXTRA FLEXIBILITY—Wire rope encounters fast sheave action, reverse bending, constant stop-and-start operation on many jobs. When this same rope must also lift or pull heavy loads, an unusually flexible, strong wire rope is needed.

Rope jobs like paver skip hoists, overhead cranes, large shovel and dragline hoists, and sawmill carriages demand these qualities. That's where the use of 6 x 37 Red-Strand wire rope saves time and money.

Where will 6x37 Red-Strand improve your wire rope service?

Look at a cross section of 6 x 37 wire rope. You see three rings of small, uniformly sized wires in each strand. This differs from a rope construction like 6 x 19, which contains fewer and larger wires.

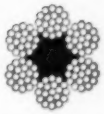
The *smaller size* wires make 6 x 37 more *flexible*. The *larger number* of wires maintains rope *strength*.

Would this combination improve your wire rope service? Would it solve a problem for you? Leschen's higher-than-rated quality is also providing longer-than-expected service to heavy industry everywhere.

Check with your Leschen man. He can help you.

Leschen's 64-page Wire Rope Handbook tells you all about 6 x 37 and other Red-Strand wire rope constructions. Ask or send for your free copy.

6 x 37



6 x 19

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

LESCHEN
HERCULES Red-Strand
WIRE ROPE

A Superintendent on Safety

(*From page* 139)

by the superintendent; and when the job is completed, the foreman notes the date of completion, signs his name, and returns the form to the superintendent. When the superintendent receives the completed form, he files it with his duplicate copy. The duplicate copies held by the superintendent serve as a follow-up by him until the job has been completed and the original has been returned to his office.

Worker participation in safety is the best way to promote safety consciousness. Our reason for having the foreman on the safety committee is that we think he is as much responsible for the safety of his men as he is for the equipment in his department. It is then the duty of the foreman to carry out the suggestions of the safety committee and to see that his men work safely. We try to help our foreman in his safety program by attending his department safety meetings.

Good housekeeping has a definite effect on safety. We try to train our men to consider this phase of work as a component part of their regular duties. . . . A plant which has a reputation of being accident-free can scarcely evaluate the prestige gained thereby, nor the effect on its employees and the community where it is located.

Zonolite Opens Operations In Three New Locations

Vermiculite processing plants in Ellwood City, Pa., and North Billerica, Mass., have been acquired by the Zonolite Company, Chicago, according to an announcement released by Andrew T. Kearney, president. At the same time the opening of a vermiculite processing plant in St. Thomas, Ont., Canada, by F. Hyde & Company Limited, processing distributor of Zonolite products, was announced.

The new plant in Ellwod City replaces the company's former plant in Sharpsburg, Pa. Paul W. Sylvester is district manager of the plant territory, which includes western Pennsylvania, eastern Ohio, and parts of West Virginia.

In North Billerica, 18 miles north of Boston, the newly-acquired plant will serve contractors, architects, and dealers in the New England area. Vernon E. Swan is district manager of the territory.

F. Hyde & Company's plant in St. Thomas will serve western Ontario's major cities, including London, Sarnia, Windsor, and surrounding communities.

The Zonolite Company and its affiliates process vermiculite for use as loose-fill insulation, plaster and concrete aggregate, acoustical material, and soil conditioner.

These installations bring to 41 the number of processing plants in the United States and Canada operated by Zonolite and affiliated companies.

WIN TWO WAYS *WITH* EAGLE

Actual installation photo of 16 x 24 hammermill at Spore, Ohio. Larger units up to size 36 x 42 hammermills. Eagle also makes jaw crushers and truck-mounted loaders.

(1) Higher quality aggregate brings premium prices . . .

(2) Lower cost maintenance means greater profit.

Eagle hammermills are known for their excellence on both points. Simple facts like these have led to gratifying repeat orders from leading producers.

Send for details now!

EAGLE CRUSHER CO., Inc. GALION OHIO·U·S·A

JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS

Future plans for better service to the customers of Fort Worth Sand and Gravel Company and Texcrete Company of Fort Worth were discussed by these four key executives, as the two companies announced a combining of operations. Left to right: Charles E. Marshall, executive vice-president, Fort Worth Sand and Gravel; Ralph B. Rogers, president, Texas Industries, Inc.; E. E. Popplewell, Fort Worth Sand and Gravel president; and George A. Meihaus, newly-elected vice-president of Fort Worth Sand and Gravel and former general manager of Texcrete of Fort Worth. (See p. 69 of our December issue for the full story of the move to combine operations.)

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

1. TOUGH SCREENING PROBLEMS? Some of them are discussed in this literature from *Productive Equipment Corp.*, makers of eccentric vibrating screens. Special equipment includes a cleaner for materials causing "near size" binding and electrical screen cloth for damp sticky materials.

2. PROTECT YOUR TRACTOR DRIVER. A spun glass canopy for crawler tractors that mounts on the fenders and reduces vibration is described in this *Allen Industrial Products* leaflet.

3. DUST FILTERING. Even higher filtering efficiency is said to be possible using the new self-adjusting blow rings, a major improvement in the *Day* AC reverse air jet dust filter described in this literature.

4. BULK LOAD TRAILERS made by *Fruehauf* for cement and other pulverized or granular materials feature a twin-screw for quick unloading and baffles to keep load from shifting.

5. STOP BELT SLIPPAGE wherever transmission belting is used with the liquid treatment *Beltraction*, this leaflet advises. The substance is said to keep belts clean of foreign materials, and waterproof, oil-proof and weatherproof them.

6. ENGINE GUIDE. *Le Roi* has this 4-page bulletin to give you a complete tabulation of torque, rpm, horsepower ratings and other factors on its gasoline, natural gas and butane engines and power units.

7. SCREW WASHERS. Sixteen models with single or double screws and capacities from 35 to 250-tph on plus 100 mesh material are described in this *McLanahan* bulletin.

8. PORTABLE COMPRESSORS. The Blue Brute line of two-stage, air-cooled units, gasoline or diesel-powered, capacities 30 to 600-cfm, are described in this 28-page *Worthington* brochure.

9. VIBRATING SCREEN. Recommended for small quarries, roadside plants, cinder block plants and the like, the single-deck, suspended *Hewitt-Robins* unit comes with its vibrator mounted above or below, this 8-page bulletin shows.

10. MATERIALS HANDLING and earth-moving jobs done by the *Hough* Payloader tractor-shovel are featured in this 16-page brochure. The one-cubic yard unit which has four wheel drive comes in seven sizes.

11. CLAMSHELL BUCKETS for rehandling, heavy digging and other duties are shown with capacities, weights, and other pertinent details in this *Brownhoist* folder.

12. GEAR SPEED REDUCERS of the right angle type, parallel and vertical drives, are shown in this 84-page *D. O. James* catalog. Helps on selecting the right unit are included. Reduction ratios from 1:1 to 1100:1 and ratings from 14-hp to 350-hp feature the line.

13. NEWEST OF ITS BREED. Said to be the first entirely new design in crawler prime movers in over 20 years, the new *Eimco* 105 tractor-loader has many new features for better heavy-duty loading, among them an unusual transmission arrangement.

14. LONGER BEARING LIFE results from a new internal design that increases the capacity of *SKF* spherical roller bearings 25 to 50 percent, says this 14-page booklet, explaining the change and presenting tables to show its superiority over the older type.

15. AUTOMATIC CONTROLS for indicating, recording, controlling liquids, granular solids, viscous fluids, powder, etc. are shown in this 8-page catalog of the *Fielden* division of *Robertshaw-Fulton*.

16. AIR COMPRESSORS in the 85 to 210-cfm class, gasoline or diesel power, single and two-stage units, are shown in this 12-page *OK Machinery* booklet.

17. HARD-FACING ELECTRODES for correcting wear patterns from abrasion, impact, corrosion, heat and/or compression—the Wear-Arc line—are shown in this 12-page application bulletin from *Alloy Rods*.

18. DETECTING METAL with the new *RCA* electronic unit is described in this bulletin. The system gives an alarm whenever dangerous metal is on the conveyor on the way to crusher or screens.

19. CONVEYING BY AIR. This 16-page *Fuller* booklet shows the flexibility and adaptability of the Fuller-Kinyon system to bulk materials moving work in the non-metallic minerals field.

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PERMIT NO. 44
(Sec. 34.9 P. L. & R.)
CHICAGO, ILL.

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JANUARY, 1954

Please send more information on circled items described in this issue:

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Company_____

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More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

20. DREDGING LADDERS. Clearly describing the *Eagle* Swintek travelling chain ladder operation with pictures, sketches and pithy copy, this 16-page brochure shows this dredging machine at work all over the nation.

21. INSTRUCTIONS for installing basic refractory brick in the hot zones of cement kilns,—a 30-page pocket-size volume from *Kaiser Aluminum & Chemical* draws upon the firm's experience with installations using this new development.

22. SPEED DRIVES of the positive, infinitely variable type (PIV) recently added to the *Link-Belt* line are shown in this bulletin. The 20 and 25-hp units are made with or without input and/or output gears.

23. A UNIQUE BOOK has been issued by *Thew Shovel* to describe its Lorain TL shovel-cranes. Transparent sheets, imprinted with photographs, unveil the internal workings of the turntable, taking you "inside" to another component assembly as you turn each page. This is one of the first industrial uses of this layer-by-layer technique, developed a few years ago for medical books.

24. NEW THROTTLE CONTROL. Developed by *Link Belt Speeder* for shovels, drill rigs, dozers, etc., this stepless control can be mounted anywhere a governor rod or cable can be attached.

25. LIME HYDRATION. The Knibbs Continuous Hydrating Process is discussed in this 12-page *Holbeck Corp.* brochure. This process requires only a minimum of labor to operate a pressure plant, the treatise points out.

26. DRILL STEELS are discussed in this 20-page *Bethlehem* brochure, which devotes a special chapter to ultra-alloy steels. Instructions for both working and using the steels feature the presentation.

27. MAXIMUM TRACTION. Medium-duty trucks with rated capacities of 11,000 and 15,000-lb. have maximum traction for off-highway work this *International* brochure says, describing the new I-H 4-wheel drive models.

28. ROLL CRUSHERS made by *Lippman Engineering Works* for high capacity fine reduction of a wide range of non-metallic minerals are described in this 12-page bulletin filled with photographs, drawings and tables.

29. "A NEW CONCEPTION" of the economy, utility and simplicity of belt conveyors is presented in this new catalog from *Barber-Greene*. It shows standardized components and accessories, using line drawings to illustrate the relationship of the individual unit to the entire conveyor.

30. REDUCE YOUR WASTE in kilns and dryers urges this *Plibrico* bulletin. It shows 9 ways to cut costs by getting the most out of your refractory linings.

31 SCALPING SCREENS for heavy-duty work in pit and quarry are detailed in this *Link-Belt* folder about its two models in the 900-rpm class, one having a total vibrating weight of 6800 lbs., the other, 8600 lbs.

32. MOTOR-GENERATOR INFORMATION fills this 50-page booklet from *Allis-Chalmers*. Reprinted from the 1952 edition of Lincoln's Industrial-Commercial Electrical Reference (an $18.75 volume), the chapter is a handy guide to the selection of motive power for industrial applications.

33. PROCESS CONTROLS made by *Bailey Meter* for metering and automatically controlling 17 process variables are described in this catalog. Diagrams are used to explain the purpose and use of meters and controls.

34. HYDRAULIC HOSE SELECTOR quickly gives you the proper hose for hydraulic control uses. Furnished by *Republic Rubber*, maker of Wiretex rubber covered hydraulic hose, the selector gives you the desired information, starting with any known factor.

35. MAINTENANCE tools—electric hammers, wrenches, drills, saws, sanders, screwdrivers, grinders, etc. are among the power tools in this *Syntron* catalog.

36. RUST IS THE ENEMY. You can put it to rout with primer coatings, short and long type oil coatings, machinery and implement finishes shown in this *Rust-Oleum* 16-page catalog.

37. DIESEL POWER UNITS in 12 sizes from 57-hp to 500-hp are shown at work in this *Caterpillar* brochure illustrating many mobile and stationary uses throughout our field.

JANUARY, 1954

Please send more information on circled items described in this issue:

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Selection of Wire Rope Slings For Specific Applications

HAVE you ever wondered whether the types of slings you have in use are exactly what you should be using? If you have, it is quite understandable. Even a sling user of long experience may become confused occasionally, with the wide selection of slings available by types, constructions, sizes, and makes.

By WALTER C. RICHARDS
Chief Engineer
Leschen Wire Rope Division
H. K. Porter Company, Inc.

This discussion will establish general rules of procedure for the selection and application of wire slings—a guide to proper sling selection. The result should mean saving time and eliminating confusion when slings are specified for a particular job.

A basic question is, of course, should a chain sling or a wire rope sling be used? Both have their merits. Chain slings have precedence in many applications, but the use of wire rope slings has been steadily increasing within recent years. In general, if the use of one type or the other seems to be based on precedent or habit alone, it is wise to check the application very thoroughly to determine whether that habit should be changed.

Once it has been determined that a wire rope sling will do a better job, there are six factors to consider before the type, size and length of the sling can be specified: (1) object of the load — its size, weight, shape, etc.; (2) working area — for example, amount of headroom; (3) size and description of crane hook; (4) angle of inclination — vertical lift, or otherwise; (5) location and description of lifting lugs, if any; and (6) plane of attachment of fittings.

With this information documented, your sling supplier can be of greater help in recommending the sling that will give you the best possible service. First, the best-suited *type* of sling will be determined.

TYPES OF SLINGS

Slings are classified by three types: (1) standard single-part wire rope slings; (2) endless slings, which may either be continuous strand (grommet) or spliced endless; and (3) multiple — part laced or braided slings.

Walter C. Richards

Standard Single-Part Standard wire rope slings are made up of one or more lengths of standard wire rope. The sling may have a single length of wire rope with necessary end attachments, or it may be in the form of a bridle, with two, three, or four legs. It is well suited for general lifting operations (large or small), where the sling is attached to fixed rings or lugs, and also where sharp bends in the sling are not major considerations. A standard wire rope sling is generally available in sizes from ⅜-in. to 2-in. diameter. Smaller diameters generally are 6x19 construction, and diameters 1¼-in. and over are 6x37 construction.

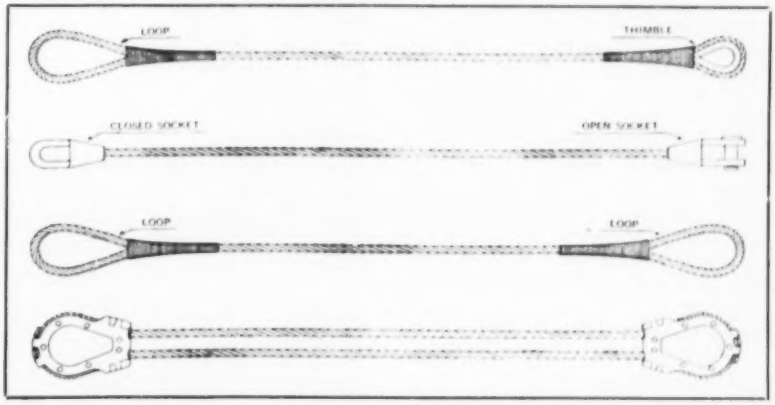
Single-part slings are available with various combination of end fittings, such as thimbles, loops, hooks, open and closed sockets, swaged-sleeve loops, and "inlaid" spliced loops.

It is usually easy to determine the size of a standard wire rope sling best suited to the application, simply by checking maximum loads to be lifted, and then referring to the rated capacity charts (I and II) provided by wire rope sling makers. Standard wire rope slings cost less than multiple-part slings; but although you may find you can use this lower-cost standard rope sling, it is a good rule not to let cost misguide you into overlooking more efficient, more economical slings of other types. When standard rope slings are made of flexible, preformed construction, they are easier to handle.

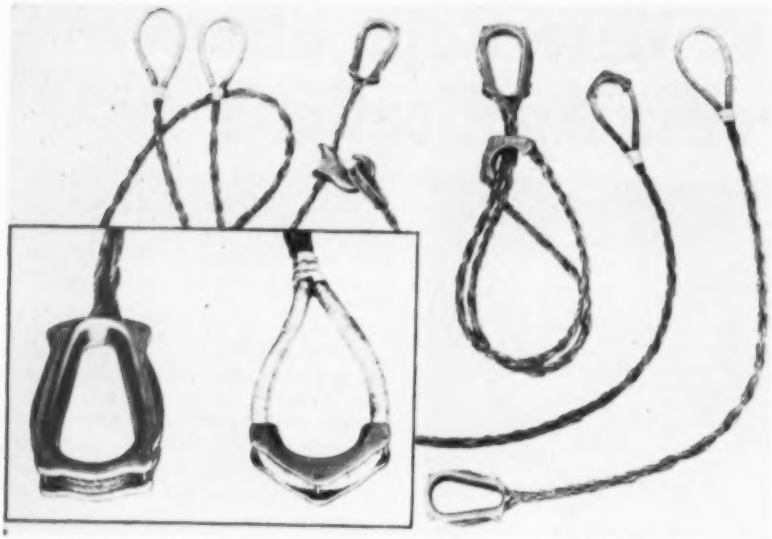
Typical applications include handling machinery, castings, and objects having fixed rings or lugs for attachments.

Continuous-Strand Slings A wire rope sling made of a continuous rope strand is called a grommet sling. This single length of strand is laid in place around itself to form a round 7-strand endless sling. It is generally available in sizes from ¼-in. to 2¼-in. in diameter—with strands of 19 wires in sizes up to 1⅛ in., strands of 37 wires in sizes from 1¼ to 2¼ in.

Grommet slings are generally more efficient than spliced endless single slings in the short lengths in which these slings are ordinarily used.



Types of single-part wire rope slings, all suitable for lifting operations in which the sling is attached to fixed rings or lugs.



Eight-part braided slings. Closeups show a new type of re-usable thimble fittings attached by pins instead of conventional hammer-down clamps.

They are made with only one tuck instead of six, as required in the running splice. Frequently grommet slings can be used without the need of forming loops or attaching fittings. They are ideal for forming sling "hitches" of various types.

Grommet slings may be used for lifting lighter loads, where the sling is not subject to excessive friction, to severe bending, or to heavy cylindrical loads. It is economical to have grommet slings available because they are easy to use and easy to handle, and do serve a variety of purposes. Typical uses are setting tanks and raising oil refinery chambers.

Multiple-Part Slings In the construction of multiple-part wire rope slings, the principle of lacing or braiding ropes of smaller diameter is followed instead of using a single wire rope as the body of the sling. Two forms of such multiple part slings are called the flat-laced and the braided types.

A flat-laced sling (Chart III) is what the name implies — several parts of wire rope laced together to form a smooth, flat-bodied sling. Actually the form of the body section is flat, rather than round, so that load pressure is distributed over a greater area than with a round-bodied sling. Consequently, it has a strong gripping power on both flat and round surfaces, and there is less wear on the sling, with less marking of highly finished surfaces on the load. Also there is greater flexibility.

The loops at the ends of the flat-laced slings are designed to be self-supporting without the use of thimbles or servings, as are usually required in the case of other multiple-part slings. Loops are formed by laying in an additional section of wire rope, which forms a round section loop end. No splicing is required in that operation, and flexibility is maintained in the sling — both in body and the loops.

Braided Slings Braided slings consist of several parts of wire rope assembled into a round-bodied braid. The most commonly used types are 6-part or 8-part braided slings.

The braiding process provides a highly efficient combination of all-round flexibility with utmost strength. Because of the braiding internal tension in the sling is at the minimum, so that there is far less tendency of kinking or looping. It wraps around a load easily and securely, without becoming "set" or deformed.

This makes the sling exceptionally easy to handle, easy to apply to both the load and the crane hook, and also easy for carrying odd-shaped loads and slippery objects. Highly finished loads are held snugly and surely with braided slings, without marring or scuffing the finished surfaces.

Because of the combination of wire rope parts formed into a braid, considerable strength is built up into this type of sling, as compared with single-part slings of equal flexibility. (See Chart IV).

Consequently, this type of sling, as well as the flat-laced type, are most suitable for heavy-duty work. Both types are available with wire rope parts in sizes from ⅛-in. diameter up to 1⅛-in. It is easy to understand, then, that if you use an eight-part sling, with each part consisting of a complete wire rope, you are able to carry loads of tremendous weight,

Unloading this 41-ton shovel and its 110-ton frame was handled with four 7/8-in. six-part flat-laced slings from two cranes.

yet to maintain sufficient flexibility in the sling for easy handling.

Flat-laced and braided slings may be used in the single-part type or in the form of two-, three- or four-leg bridles. They may be used in place of single slings and in addition may be specified for the most difficult applications.

DIAMETERS AND LENGTHS

Regardless of the type of sling used, you must determine the most suitable and most efficient sling length and diameter for the given application. These can be calculated from the weight and shape of the load to be lifted. Also, it is necessary to know whether the legs of the sling will lift vertically or at an angle. The nearer vertical the legs, the less the tension in the sling.

This is illustrated in the accompanying diagram. It shows, for example, that a rope lifting a 1,000-lb. load with legs vertical, requires a 1,000-lb. capacity sling. As the vertical angle increases, the sling must be of continuously greater capacity—up to about six times the weight of the load at 170 degrees.

If you have any question regarding the lengths or diameters of slings you should use, be sure to tell your supplier all the details of your requirements. This procedure is the only sure way of getting exactly what you need.

When ordering, the length is customarily shown from bearing to bearing of loop, thimble, hook, or socket for standard, flat-laced and braided slings. For grommets the circumference should be given, or the length when doubled.

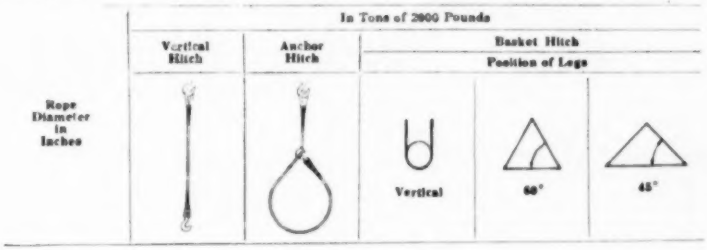
QUALITY AND WORKMANSHIP

With an understanding of the details of design and application, one should also give consideration to the quality of material, engineering skill, and workmanship that go into the production of slings. When the safety of workers and efficiency and economy of operation are involved, it is extremely important to obtain the product of the best quality available.

This applies to both materials and workmanship. It is something to which extra attention should be given, to make sure that every inch of wire that goes into slings meets the highest possible standards for strength and torsion resistance. All wires should be carefully tested, and those not meeting established standards should be rejected. Completed slings should be given the same exacting tests.

Sling testing by users is a good idea wherever and whenever facilities are available for that purpose. Work tests are also advisable to determine exactly how a particular make, type, or size of sling performs best on the job.

A good understanding of the types of slings available is, of course, most desirable in wire rope sling selection. The additional services and attention given by sling suppliers in helping the user to select the correct sling is also important. Equally important is the need for extreme accuracy in the manufacture of slings. If all three of these conditions are met, the result



Rope Diameter in Inches	In Tons of 2000 Pounds				
	Vertical Hitch	Anchor Hitch	Basket Hitch, Position of Legs: Vertical	60°	45°
6x19 Fiber Core					
3/8	.9	.7	1.8	1.5	1.2
1/2	1.5	1.2	3	2.6	2.1
5/8	2.3	1.7	4.6	4	3.2
3/4	3.4	2.8	6.8	5.9	4.8
7/8	4.6	3.8	9.2	7.9	6.5
1	6	4.9	12	10.4	8.5
1 1/8	7.5	6.2	15	13	10.6
6x37 Fiber Core					
1 1/4	8.7	7.2	17.4	15	12.3
1 3/8	10.6	8.7	21.2	18.3	15
1 1/2	12.6	10.4	25.2	21.8	17.8
1 5/8	14.7	12.1	29.4	25.4	20.8
1 3/4	17	14.1	34	29.4	24
1 7/8	19.5	16.1	39	33.8	27.6
2	22.1	18.3	44.2	38.3	31.2

Charts I and II—Rated capacities for standard single wire rope slings (above) and standard wire rope bridle slings (below). The rated capacities shown in these tables provide a design (safety) factor, varying with the rope diameters, of from 6 to 7. Tables are based on an average diminishing splicing efficiency of from 95 to 75 percent. For slings with wire rope core add 7½ percent to the rated capacities of the tables above.

Rope Diameter in Inches	In Tons of 2000 Pounds								
	Two Legs			Three Legs			Four Legs		
	Vert.	60°	45°	Vert.	60°	45°	Vert.	60°	45°
6x19 Fiber Core									
3/8	1.8	1.5	1.2	2.7	2.3	1.9	3.6	3.1	2.5
1/2	3	2.6	2.1	4.5	3.9	3.2	6	5.2	4.2
5/8	4.6	4	3.2	6.9	5.9	4.8	9.2	7.9	6.5
3/4	6.8	5.9	4.8	10.2	8.8	7.2	13.6	11.8	9.6
7/8	9.2	7.9	6.5	13.8	11.9	9.7	18.4	15.9	13
1	12	10.4	8.5	18	15.6	12.7	24	20.8	16.9
1 1/8	15	13	10.6	22.5	19.5	15.9	30	26	21.2
6x37 Fiber Core									
1 1/4	17.4	15	12.3	26.1	22.6	18.4	34.8	30.2	24.6
1 3/8	21.2	18.3	15	31.8	27.5	22.4	42.4	36.7	30
1 1/2	25.2	21.8	17.8	37.8	32.7	26.7	50.4	43.6	35.6
1 5/8	29.4	25.4	20.8	44.1	38.2	31.2	58.8	51	41.6
1 3/4	34	29.4	24	51	44.2	36	68	58.8	48
1 7/8	39	33.8	27.6	58.5	50.6	41.3	78	67.5	55.1
2	44.2	38.3	31.2	66.3	57.4	46.8	88.4	76.5	62.4

Diam. of Each of the Six Rope Parts	In Tons of 2000 Pounds										*Single Part Round Wire Rope with Fiber Cores having Approx. Equal Strength
	One Leg	Two-Legs			Three Legs			Four Legs			
	Vertical	Vertical	60°	45°	Vertical	60°	45°	Vertical	60°	45°	
1/8	6	1 2	1	8	1 8	1 5	1 2	2 4	2	1 6	1/4-5/16
3/16	1 3	2 6	2 3	1 9	3 9	3 4	2 8	5 2	4 6	3 8	3/8-7/16
1/4	2 4	4 9	4 2	3 4	7 3	6 3	5 1	9 8	8 4	6 8	1/2-5/8
5/16	3 8	7 5	6 5	5 3	11 2	9 7	7 9	15	13	10 6	3/4
3/8	5 3	10 6	9 2	7 5	15 9	13 8	11 2	21 2	18 4	15	7/8-1
7/16	7 1	14 2	12 3	10	21 3	18 4	15	28 4	24 6	20	1-1 1/8
1/2	9 3	18 5	16	13 1	27 8	24	19 6	37	32	26 2	1 1/8-1 1/4
9/16	11 5	23	20	16 5	34 5	30	24 7	46	40	33	1 1/4-1 1/2
5/8	14 5	29	25	21	43 5	37	31 5	58	50	42	1 1/2-1 3/4
3/4	21	42	36	30	63	54	45	84	72	60	1 3/4-2
7/8	28	56	49	40	84	73 5	60	112	98	80	2-2 1/4
1	36	72	62	51	108	93	76 5	144	124	102	2 1/4-2 1/2
1 1/8	45	90	78	64	135	117	96	180	156	128	2 3/4

Chart III—Rated capacities for flat laced wire rope slings. Factor of design (safety), 6. As these are "approximate" figures, it is advisable to make a careful study of all conditions before deciding upon the size of sling to be used.

will be long sling service, greater safety, and reduced sling costs.

SLING SELECTION

It is essential for the sake of safety that slings of sufficient strength be selected. In making the selection, where two or more legs are involved, consideration must be given to the important fact that the stress in a sling varies with the angle at which the legs are used.

In this discussion it is assumed that the loads are approximately symmetrical and in balance, and that the legs are of equal length. If a sling is to be calculated for an unbalanced load—where one leg will handle a greater weight than the other—this must be clearly indicated, and a sketch should be submitted to the supplier showing the location of the center of gravity.

In Chart II, rated capacities for bridle slings are shown with both legs vertical. These are usually attached to a spreader bar and used to lift locomotive or car bodies. The typical bridle sling is seldom used with both legs vertical. They are generally spread apart as shown.

If the legs are to be vertical, the full rated working capacity of the sum of the two ropes is available. When the legs are spread at an angle, the allowable rated working capacity will decrease as the angle increases.

Calculating Rated Capacities For a sling of given rope diameter the rated working capacity at 60 degrees, 90 degrees, and 120 degrees would be calculated by using the percentages, as shown in Chart V, or for any angle by reference to Chart VI.

The degree of spread may be designated either by the included angle at the hook, or by the angles made by the legs with a horizontal plane.

In the case of a sling with legs of equal length, spread at an angle of 60 degrees at the top, the legs would also make an angle of 60 degrees with the horizontal. If the angle at the top were 90 degrees, the legs would make an angle of 45 degrees with the horizontal. The relationship is based on the law that the sum of the interior angles of a triangle is 180 degrees.

Calculating Rope Diameter To determine the diameter of rope to be used for given conditions, the stress in each leg of a two-legged sling is taken as equal to half the load divided by the sine of the angle at which the leg is inclined to the horizontal.

Chart VII shows how the tension in the rope increases as the angle with the horizontal decreases. For example, Diagram "F" demonstrates the very high tension produced when a sling is used at a very flat angle.

Chart VI (sling angle calculation) may be used in determining the rated capacity of a given sling or in calculating the proper rope to use for a given load.

Chart IV—Rated capacities for 8-part braided slings.

Diam. of Each of the Eight Rope Parts	In Tons of 2000 Pounds					
	Vertical Hitch	Choker Hitch	Basket Hitch			
			Vertical	60°	45°	30°
1/8	8	6	1 6	1 3	1 1	8
3/16	1 8	1 3	3 6	3 1	2 5	1 8
1/4	3 2	2 4	6 4	5 5	4 5	3 2
5/16	5 0	3 7	10 0	8 6	7 1	5 0
3/8	7 0	5 2	14 0	12 1	9 9	7 0
7/16	9 5	7 1	19 0	16 4	13 4	9 5
1/2	12 3	9 2	24 6	21 3	17 4	12 3
9/16	15 4	11 5	30 8	26 7	21 8	15 4
5/8	19 0	14 2	38 0	32 9	26 8	19 0
3/4	27 1	20 3	54 2	46 9	38 3	27 1
7/8	36 7	27 5	73 4	63 5	51 8	36 7
1	47 8	35 9	95 6	82 8	67 6	47 8

Safe loads shown in this table provide a factor of safety of approximately five.

DIMENSIONS OF FITTINGS

Diameter of Each of 8 Parts	HOOK					Socket Size	Shackle Size	Choker Hook	
	Size	Weight	D	E	R			Size	Weight
1/8	25	1 1/2	4 3/32	1 1/4	4 9/16	1/2	1/2	2	1 1/4
3/16	26	2 1/4	4 17/32	1 3/8	4 13/16	5/8	5/8	3	3
1/4	29	6	6 3/8	1 7/8	6 5/16	7/8	7/8	4	4 1/2
5/16	31	11 1/4	7 7/16	2 1/4	8 13/32	1	1	5	8
3/8	33	20 1/4	9 3/8	3	10 3/4	1 3/8	1 1/4	6	13 1/2
7/16	34	33	11	3 3/8	12 1/16	1 1/2	1 3/8	7	30
1/2	34A	41	11 15/16	3 5/8	12 25/32	1 5/8	1 1/2	8	48
9/16	35	50	13	4	14 1/16	1 7/8	1 3/4		
5/8	35	86	15	4 1/2	15 5/8	2 1/8	2		
3/4	36A		15	4 1/2	15 5/8	2 1/2C	2 1/4		

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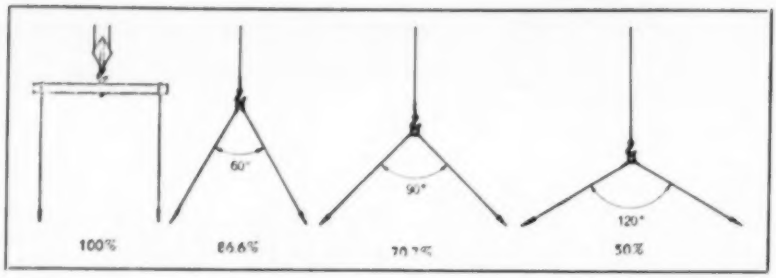
Chart V—This chart shows how the safe working load of a bridle sling decreases as the angle of the leg spread increases.



The sloping lines correspond to the legs of the sling taken at intervals of 5 degrees. They may be used as shown by the diagram in the upper left-hand corner to determine the angles formed by the legs at the ring or link, and with a horizontal plane.

To illustrate this, a triangle is shown in heavy lines, one side of which is detailed as the leg of a sling. The legs form the 60-degree angle "A" at the top, and two 60-degree angles "B" at the bottom, between the legs and a horizontal plane.

The angle of spread (at ring or link) is shown in the vertical column A. The figures shown under B are the angles between the legs and a horizontal plane and are the ones used in the calculations. Under C are the factors to be used in determining the safe load capacities and under D the factors used when calculating the diameters of the rope required.

Examples 1. What is the rated capacity that may be handled with a 2-leg bridle sling made of ⅝-in. diameter Hercules Red-Strand wire rope, where the conditions require that the legs be spread at an angle of 70 deg.

From Chart VI it will be seen that if the angle of spread between legs is 70 deg., the angle (B) that each leg makes with the horizontal (when in balance) is 55 deg. A stress of 2.3 tons (see first column of loads on Chart I) could be safely applied to each leg, and 4.6 tons or 9,200 lb. total for the sling if used vertically. To determine the rated capacity at the required angle, the figure 9,200 is multiplied by the factor .8192 shown in column C opposite the 55-deg. horizontal angle. (Chart VI)

Required rated capacity W, at given angle of spread = (rated capacity for two vertical ropes) × (factor in column C)

= 9,200 × .8192 = 7,536 lb.

2. What diameter of rope must be used in a two-leg bridle sling to handle 10,000 lb. when the legs are spread at an angle of 80 deg.?

As in the first example, the chart will show that with the legs spread at an angle of 80 deg. the horizontal

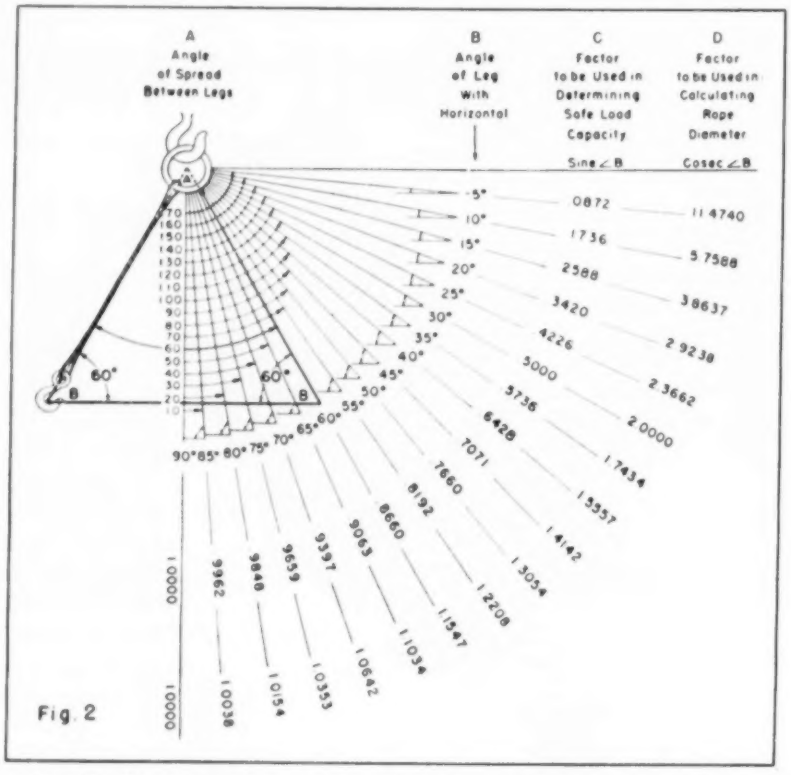


Chart VI—This chart may be used in determining the rated capacity of a given sling or in calculating the proper rope to use for a given load. The sloping line corresponds to the legs of the sling taken at intervals of 5 degrees.

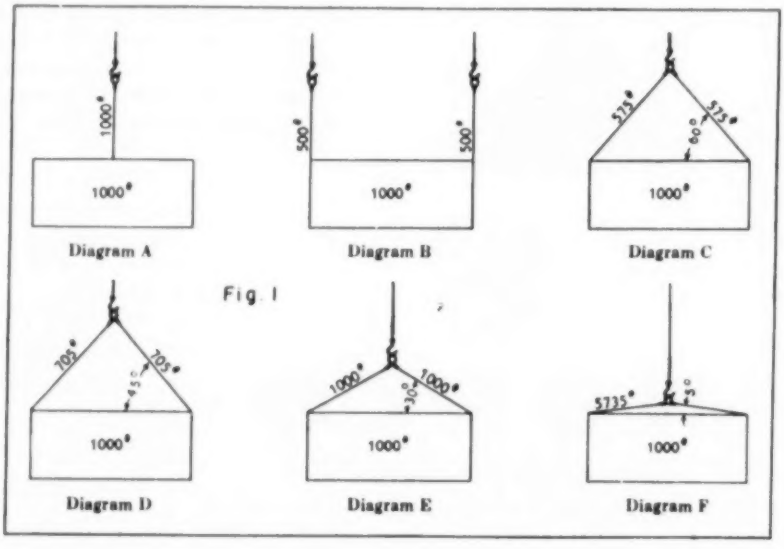


Chart VII—How tension in a sling increases as the angle with the horizontal plane increases. In "A", a 1,000-lb. load creates 1,000-lb. tension on a vertical center lift; "F" demonstrates the high tension produced when the sling is used at a flat angle.

angles would be 50 deg. each. One-half of the load (or 5,000 lb.) must be carried by each leg.

To calculate the tension developed in each leg by this vertical load of 5,000 lb., multiply the load by the factor in column D opposite the angle of 50 deg.

Tension T in one inclined leg = (½ total vertical load) × (factor in column D)
= 5,000 lb. × 1.3054 = 6,527 lb.

Applying a factor of 7, a rope with a breaking strength of 45,689 lb. or 22.8 tons is required. This would indicate a ¾-in. 6x19 Hercules Red-Strand wire rope. Or from the first column under safe load, it will be seen that to handle 6,527 lb. safely on a single leg, a ¾-in. Hercules Red-Strand wire rope is needed. (Chart I)

Dominion Asbestos Mines Acquired by National Gypsum

Stockholders of the Dominion Asbestos Mines Ltd., Montreal, Que., have approved an agreement with the National Gypsum Company under which the latter will be granted an option to purchase the property and assets of Dominion.

Stockholders also approved a bylaw which would permit issuance of $3,000,000 of first-mortgage bonds as required by the terms of the agreement.

Under the agreement, National Gypsum has contracted to pay stated obligations of Dominion Asbestos in return for a 90-day option to purchase all the assets of Dominion. National will make full investigation of Dominion's ore body during the option period.

According to Melvin H. Baker, chairman of the board of National Gypsum, the American firm will put $5,000,000 or $6,000,000 into mining asbestos. He added that his company will expand the operation of the Canadian company.

Keystone Div., Dravo Corp. Adds 12 Barges, Builds Plant

High rate of construction activity in the Greater Pittsburgh area gave Dravo's Keystone Division substantial orders for sand, gravel, and ready-mix concrete during 1953. To meet the continuing demand, Keystone added 12 new welded-steel barges to its river fleet late last year.

Keystone's plant in Freedom, Pa., one of its six plants in the Pittsburgh area, was vacated last year after 30 years of operation to make room for the Pennsylvania Railroad's Conway Yard expansion program. A modern new plant to replace it now is partially in operation at Rochester, Pa.

National Gypsum Company officials have announced the promotion of J. P. NICELY to the position of general commodity manager, succeeding David G. Stenberg, recently promoted to central division manager.

Quaker

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Cement Review

(*From page 118*)

ment at Niagara Falls, Ont., the Kitimat project in British Columbia, and the National Defense program, which have all now passed the peak of their cement requirements. As a result of this demand there were some shortages of cement during 1953.

There will be some carryover from all of these projects and the continuing industrial expansion and development boom will keep demand at a high level. Some falling off in demand is expected, however, one producer predicting a drop of about 10 percent in the volume of sales, unless there are new and unforeseen developments. In view of this it is expected that production will equal all possible demands in Canada during 1954.

The capacity of the cement industry was again increased considerably in 1953. No new plants were completed, but many major expansion programs were carried out. Our information shows that six new kilns went into operation, with a combined capacity of 5,250,000 bbl. It is understood that none of these replaced old equipment and that this figure represents actual increase in the capacity of the industry.

Information on current and future expansion plans are incomplete, but it is known that two existing plants will be doubled in size, for a total increase of about 2,750,000 bbl. in capacity. How much of this will replace existing capacity is not known. One new plant is reported to be under construction for possible completion in 1954. This will have a capacity of 1,500,000 bbl. annually.

British Columbia The British Columbia Cement Company late in 1952 completed the major part of a $2,000,000 expansion program at its plant at Bamberton, B. C., which increased its capacity from 1,350,000 to 2,000,000 bbl. annually. The new equipment installed included a 10½- by 350-ft. kiln, new grinding mills, additional clinker storage facilities, crushers, coolers, etc. This program is now virtually completed but all the kilns will now be equipped with dust collectors and some work will be done in the dry mill.

Canada Cement The Canada Cement Company Limited in 1952 carried on the extensive expansion and improvement program begun in 1951 with the completion of a new 800,000-bbl. dry process plant at Havelock, N. B. At the beginning of 1953 a new 11-ft. 3-in. kiln went into operation at the Exshaw, Alberta, plant, increasing the capacity of this operation to 3,000,000 Canadian (350-lb.) bbl. annually. In February of that year an identical new kiln was started up at the Belleville, Ontario plant, increasing its capacity to 3,800,000 bbl. annually. These two jobs alone increased the company's producing capacity by well over 2,500,000 bbl. annually.

That the company has not yet completed its post-war expansion program was evident when in November 1953 it announced plans for doubling the size of its 1,600,000-bbl. plant at Fort Whyte, near Winnipeg, Manitoba. Work has already started on this project. Packing facilities at both Toronto and Quebec City are also being expanded greatly to expedite the handling of shipments, both in bulk and in bags.

Ciment Quebec No recent information is available on the status of the new plant of Ciment Quebec, at St. Basile, Quebec, 28 miles west of Quebec City. This wet-process plant went into operation in October, 1951, with a capacity of 800 U.S. bbl. daily. As of late 1952 a second kiln and additional finish grinding equipment were being installed to increase capacity to about 1800 bbl. daily. This work was scheduled for completion about March, 1953. A third kiln, an Allis-Chalmers 10½- by 205-ft. unit, was on order and was scheduled to be in operation late in 1953. This addition was to increase the plant's capacity to 1,000,000 bbl. annually (4800 bbl. daily).

North Star North Star Cement Limited, Corner Brook, Newfoundland, which completed a new 100,000-ton-per-year cement plant in 1952, is reported planning to double its capacity during the next year. Originally financed by the Provincial Government of Newfoundland this plant was acquired early in 1953 by Canadian Machinery & Industries, Ltd., and a $1,000,000 expansion program is reported to be planned which will include a new kiln.

St. Lawrence The St. Lawrence Cement Company, owned by Swiss interests, is reported to have under construction a new $11,000,000 cement plant at Villeneuve, a suburb of Quebec, Que. Scheduled for completion in 1954, it is to have a capacity of 1,500,000 bbl. annually. The installation will include a pier on the St. Lawrence River for water shipments.

St. Mary's No information is available on the progress made in 1953 on the four-year expansion program of the St. Mary's Cement Company, St. Mary's, Ont., which was started in 1951. This was to increase the capacity of the plant from 660,000 bbl. to 2,100,000 bbl. annually. In 1951 a new crushing plant was completed. Work was begun in 1952 on a new raw grinding department with three Smidth Unidan mills and other equipment, and on the installation of a new 10½- by 350-ft. Smidth kiln. In the clinker grinding department two ball mills were installed which operate in closed circuit with air separators.

Self Employed Notified On Social Security Payment

Most persons who are self employed are required to report their income for Social Security purposes at the time they file their 1953 federal income tax return. In most cases the 1953 return will be due by March 15, 1954. 1953 is the third year those who operate their own trade or business have been covered under Old-Age and Survivors Insurance, more commonly known as Social Security.

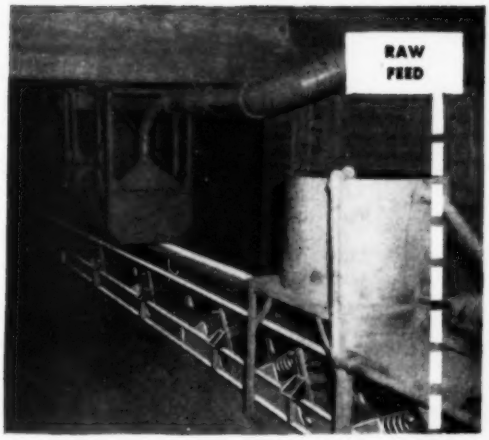
The self employed will pay their 1953 social security tax at the current rate of 2¼ percent of the net income from their trades or businesses. Any income in excess of $3600 will not be considered for Social Security purposes, and no tax will be paid on any such income. Annual income under $400 cannot be credited under the system, and no report of such income need be filed for Old-Age and Survivors Insurance purposes. The amount of social security tax payable will consequently vary between $9 and $81.

Schedule C of income tax Form 1040 should be used for the purpose of reporting one's income for Old-Age and Survivors Insurance purposes. On this schedule the self-employed individual will show his self-employment income, the amount of Social Security tax due, the nature of his business, his Social Security account number, and his name and address. The Treasury Department will forward this information to the Social Security Administration in order that the individual's Social Security account may be credited

Individuals operating their own business, either as partnerships or as sole proprietorships, are, in most cases, covered under Old-Age and Survivors Insurance.

It should be emphasized that there is *no optional coverage* under the Old-Age and Survivors Insurance system. Coverage is mandatory for all self-employed persons except those in occupations that are specifically excluded by the law. Nor may a person who is not self employed secure coverage merely by paying the Social Security tax; earnings from a trade or business are a prerequisite to reporting.

A person newly established in business need not apply for a new Social Security number if he already has one; only one social security account number should be used by any one person, even though he may alternate between working for others and working for himself. Using one number only will assure an individual of receiving full credit for all work performed under the Social Security system.



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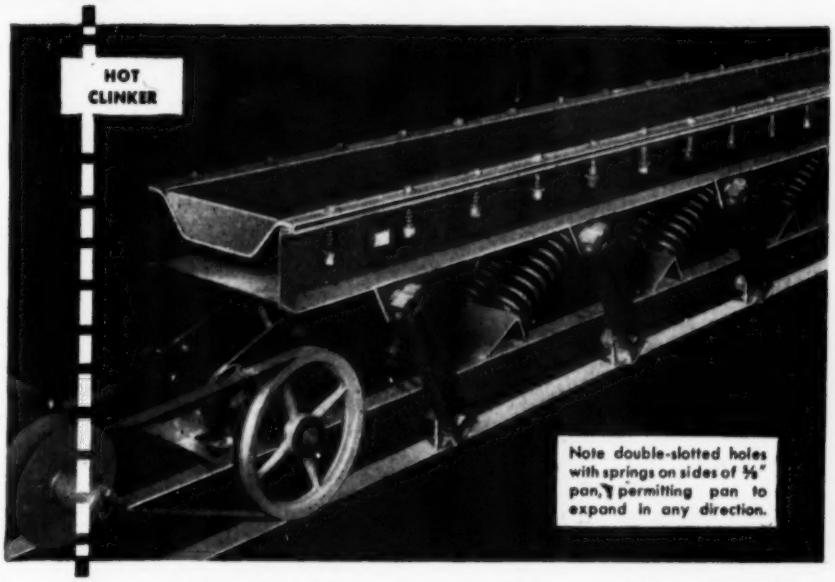

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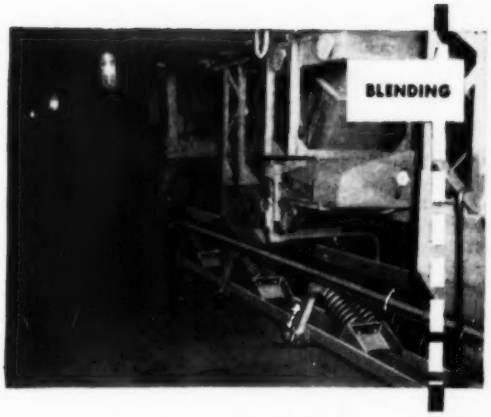

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personal mention

GEORGE S. GEE has been named sales and advertising manager for the Harris Crushed Rock Company, Kansas City, Mo. Mr. Gee was formerly on the advertising staff of the Independence *Examiner*.

WILLIAM R. SOULE has been appointed assistant controller of the Kaiser Gypsum Company, according to an announcement released by C. E. Harper, vice-president and general manager.

JOHN R. MCGINLEY, an executive of several Eastern concerns, has been elected a director of the Dragon Cement Company, Inc., New York, N. Y., formerly the Lawrence Portland Cement Company.

WILLIAM P. MCCUTCHEON, formerly secretary of the Union Sand & Gravel Company, Huntington, W. Va., was recently named president of the firm by the board of directors. Mr. McCutcheon has been affiliated with the company since 1925. He succeeds the late Edwin P. May as president.

LESLIE B. BELLAMY has been named general manager of Cleveland Quarries Company's Sterling Abrasives Division at Tiffin, Ohio. This division is reportedly one of the nation's largest producers of artificial industrial abrasives. Mr. Bellamy has been Detroit district manager for Sterling since 1946. He joined the division in 1944 as a technical field engineer.

CRIS DOBBINS, president of Ideal Cement Company, has been elected a director of the Potash Company of America, Carlsbad, N. M. Mr. Dobbins replaces Arthur G. Rydstrom, who recently resigned from the board.

ROBERT B. WOLF and PAUL J. RUTAN were recently elected directors of the Hercules Cement Corporation. Mr. Wolf, who succeeds his father, MORRIS WOLF, on the board, is an attorney in Philadelphia, Pa., and Mr. Rutan is vice-president, sales, of Hercules.

GLEN PUTTROFF, who was formerly assistant chief chemist at the Consolidated Cement Corporation's plant at Fredonia, Kans., was recently transferred to the Houston plant, where he will serve as research chemist.

WILSON MCCARTHY, president of the Denver and Rio Grande Western Railroad, has been elected to the board of directors of the Ideal Cement Company. Mr. McCarthy is a director in several other western corporations.

Milton Falkoff

Election of MILTON FALKOFF as treasurer of the Material Service Corporation, Chicago, has been announced by Henry Crown, chairman of the board. Mr. Falkoff will fill the vacancy left by the resignation of Frank J. Clifford, who had served the company for the last ten years as treasurer.

Mr. Falkoff has been with Material Service since 1947 as controller. He is also a vice-president of the firm. In his new post he will continue to serve in his former capacity. Before joining Material Service Corporation he was with the Bureau of Internal Revenue. He is a certified public accountant and an attorney, and is an instructor in taxation at the Northwestern University School of Commerce.

LLOYD A. PFAFF is the newly-appointed production manager for the Philip Carey Manufacturing Company, Cincinnati, Ohio. Before joining the Carey organization in 1947 Mr. Pfaff was associated with the Asbestone Corporation and the Ruberoid Company. He is now in charge of the manufacture of asbestos-siding and boards.

V. R. BELDEN, formerly Midwest Division sales manager for the United States Gypsum Company, has been made merchandise manager of the company's insulation products. Mr. Belden has been with U.S. Gypsum since 1936 and was appointed to the managership of the Midwest Division in 1952.

VERNON W. BARLOW, general sales manager for Monarch Cement Company, Humboldt, Kans., since 1947, is currently serving as president of the Kansas Society of Professional Engineers. Mr. Barlow has been associated with the Portland Cement Association, Wichita, Kans., serving as field engineer, and the Missouri Portland Cement Company, St. Louis, Mo., as concrete engineer and assistant to the general sales manager.

JOSEPH A. BULLEN, president of the Fountain Sand and Gravel Company, Pueblo, Colo., has been appointed a Colorado state highway commissioner, to fill the unexpired term of the late Ira K. Young. The district he represents includes Custer, Douglas, Elbert, El Paso, Fremont, Huerfano Park, Teller, Lake and Chaffee counties.

Seven new assignments on Kaiser Gypsum Company's sales staff was announced today by Colin Campbell, general sales manager.

New representatives added to the rapidly expanding sales organization in the Pacific Northwest district include DEAN F. COOPER, Portland; EDWARD DENNING, Tacoma; CARL HENDRICKS, Spokane; and ROBERT J. ARNOLD, Seattle.

Before joining the Kaiser Gypsum staff Mr. Cooper was with the U. S. Merchant Marine, Mr. Hendricks with Building Supplies, Inc., of Spokane, and Mr. Arnold with Bostwick Steel in the Pacific Northwest. Mr. Denning has been associated with Kaiser Gypsum's parent company, Permanente Cement Company, since 1951.

Appointed to the Southern California district are CHARLES SAYERS, San Marino, and DEANE W. ROCKWELL, Van Nuys. Mr. Sayers will be specialty salesman in rock wool and insulating board products; and Mr. Rockwell, who was formerly associated with the R. E. Howard Company of Los Angeles, has been named architectural and industrial representative for Kaiser Gypsum.

ROBERT CARY, Concord, who has been a sales representative with Kaiser Gypsum for two years, is new specialty salesman of wallboard accessories in the northern California district.

CLARENCE R. WOLF, formerly vice-president of the National Industrial Sand Association, will serve as president of N.I.S.A. under the terms of the organization's constitution, to fill the vacancy left by the death of President Cortner M. Hardy. Mr. Hardy's unexpected passing on December 6 is reported on page 75 of this issue.

JOHN K. WISE, assistant director of research for the United States Gypsum Company, Chicago, Ill., has been elected 1954 chairman of the American Chemical Society's division of paint, plastics and printing ink chemistry.

WRIGHT W. GARY has been elected president and chief executive officer of Attapulgus Minerals and Chemicals Corporation, Philadelphia, Pa. He was formerly president of the Filtrol Corporation, Los Angeles, Calif.

Three promotions have been announced by officials of the Potash Company of America, Carlsbad, N.M. JACK HESLER, former safety engineer, has been named mine development engineer; BOB BILLINGS, former assistant safety engineer, was promoted to safety engineer; and LEE SCHULTZ was appointed assistant safety engineer.

DONALD MEEK has been named senior vice-president and a director of Pacific Coast Aggregates, Inc. Mr. Meek fills the vacancy on the board of directors caused by the death of E. J. Goodpastor.

F. C. SHANKLAND, Eureka, S. D., was recently named assistant sales manager of the South Dakota (state) cement plant. He replaces Otto Mueller, who resigned to accept another position. Mr. Shankland, a former senator in the state legislature, relinquished this office to assume his duties at the cement plant.

Obituaries

BARRY O'LEARY, president and owner of the Billings Sand and Gravel Company, Billings, Mont., died recently at his home of a heart attack. He was 62 years of age. Mr. O'Leary bought the first ready-mixed concrete plant in Montana to Billings.

ALFRED S. ROGERS, president of St. Mary's Cement Company, Toronto, Canada, and Canada Building Materials, died in Toronto on October 30 of a heart attack. He was 79 years old. Mr. Rogers was also actively interested in other Canadian and American firms and organizations and headed the Elias Rogers Coal Company, which he purchased from his father in 1912.

WILLIAM E. MESSNER, 42, manager of the Del Monte Properties Company's sand department at Lake Majella, Calif., died at his home in Pacific Grove, Calif., on November 10, 1953. Mr. Messner had been associated with the Del Monte Properties Company since 1949, starting as assistant manager of the sand plant. In 1950 he was named manager.

LESTER A. OTTAWAY, for many years owner and operator of the L. A. Ottaway Sand Company, died in Wichita, Kan., on November 12, 1953, after an illness of eight months. Mr. Ottaway was well known as one of the founders of the Ottaway Amusement Company, manufacturers of small steam locomotives and trains, which have become internationally known. He was 79 years of age.

GASTON F. DUBOIS, consulting engineer and former president of the Monsanto Chemical Company, died in St. Louis, Mo., on November 1, 1953, at the age of 73 years. Mr. DuBois was born in Switzerland, and received many awards during his career including the Perkins medal, the chemical industry's highest honor, in 1943.

DAVID S. BROADFOOT, former president of the Southern Sand and Gravel Company, Columbus, Ohio, died at the Pines Convalescent Home, Waukesha County, Wis., on November 30, 1953. He was 80 years old and had been a Milwaukee, Wis., resident since 1950.

OTTO W. RATH, 59, sales manager for the Iowa-Wisconsin Division of Marquette Cement Manufacturing Company and prominent in the Midwestern building supply industry, passed away suddenly on December 16 at St. Francis Hospital in Evanston, Ill.

Born in Dubuque, Iowa, and educated in public schools there, Mr. Rath first joined the staff of Marquette Cement Manufacturing Company in 1926 as a salesman in Iowa. Several years later he was transferred to Chicago and was appointed sales manager in 1941. He had been active in this capacity until the day of his death.

but also significant

Loads like this have to be handled infrequently but when they are encountered they can't be permitted to stop operations.

If it's an Owen Bucket you can handle such unusual, especially difficult loads without fear of damage to the bucket.

Long experience has taught Owen Engineers where to build in the extra strength in additional material or *special* steel to withstand the abuse to which all buckets are subjected occasionally. That's why they render service for uncommonly long periods with remarkably low repair and maintenance expense.

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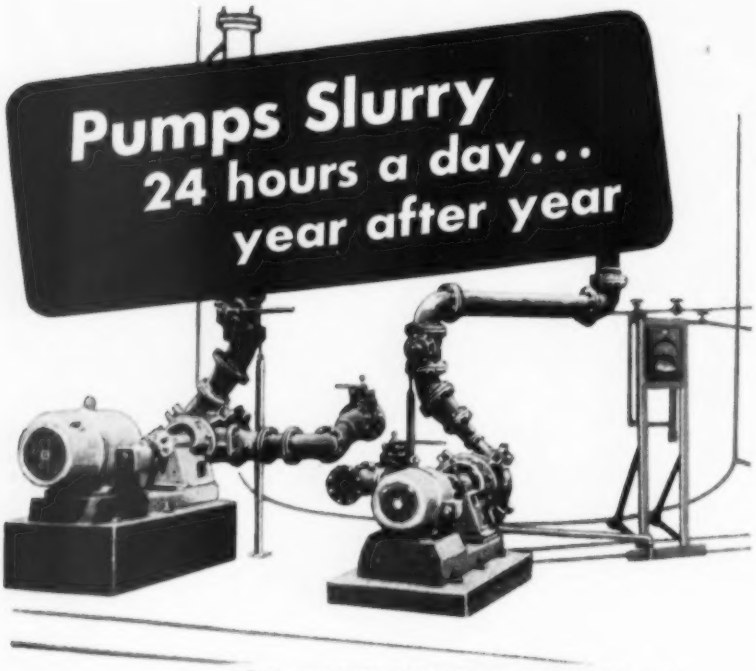
6050 Breakwater Ave., Cleveland 2, Ohio
BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIFORNIA, FT. LAUDERDALE, FLORIDA



● MORRIS TYPE R SLURRY PUMP at the left is on continuous 24-hr. duty delivering 1000 GPM of a 170° lime slurry at 100' head. Fifty-HP motor operates at 1180 RPM. Intermittent-duty pump at right delivers 200 GPM at 50' head with 7½-HP motor turning at 880 RPM.

In slurry-handling operations, "long-term service" is a meaningless claim unless the pump will work day-in and day-out with a minimum of maintenance time, trouble and expense

Morris Type R Slurry Pumps—with an established reputation for longer life—also incorporate in their design exclusive features which result in easier installation . . . fewer interruptions to service...less overhaul...fewer replacements.

To provide uninterrupted service . . .

The gland is under suction pressure only. This reduces leakage and dilution . . . keeps harsh abrasives out of the stuffing box . . . practically eliminates packing troubles.

There are no internal studs or bolts. Caustic and corrosive solutions cannot seep past threads and cause maintenance headaches.

To make installation and dismantling easy . . .

Shell is interchangeable for right or left hand rotation. Suction and discharge nozzles can be rotated around the axis of the pump to a total of 72 different locations.

Impeller removed without disturbing the piping. You simply loosen 4 *outside* clamping bolts and pull off the end cover. This feature alone saves considerable time and labor.

● *Free Service.* Morris Engineers will be glad to recommend the pump best suited to your needs for size, capacity, etc. Send necessary data today . . . include request for Bulletin 181.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS *Centrifugal Pumps*

Legal Decisions

Legal Questions Answered

By Leo T. Parker
Attorney at Law
Cincinnati, Ohio

During the last few weeks several readers of PIT & QUARRY submitted to me some interesting legal questions. I shall answer these questions and verify my explanations of law by citations of leading higher court decisions.

Must Pay Carrier's Charges

A few days ago a reader wrote, as follows: "Recently we had a trucking company hold certain equipment it hauled for us, until we paid the *unsatisfactory* bill. When finally we decided to pay the bill, the trucking company added a storage bill for keeping the equipment during the period of controversy, claiming it had a lawful lien on the equipment to secure payment of both the transportation and storage charges. Does the law give the trucking company such a lien on our equipment?"

According to leading higher court decisions, the answer is yes.

For example, in *Hanaman v. Liberty Trucking Company*, 7 N.W. (2d) 609, it was disclosed that a common carrier transported an 1,800 lb. machine for a gravel company which was not ready to take delivery of the machine. The gravel company official testified in the subsequent trial that the carrier's official promised to store the machine free of any charges until it was convenient for the gravel company to take delivery.

Later the carrier refused to deliver the machine to the consignee until it paid $10 for transportation and $63.35 for storage. The counsel for the gravel company contended it was not liable for payment of the storage charges because the official of the carrier had promised to make no charge for this service.

It is interesting to observe that a higher court held that the carrier had a valid lien on the machine until both the transportation and storage charges were paid, and said:

"Defendant (carrier) was not only authorized, but was positively required to make the scheduled charges for storage, as well as transportation, and the lien therefor could not be waived. . . . Any promise or understanding that there was to be no charge for storage, or no lien therefor for the freight charge, could clearly be unlawful and void."

Other higher court decisions are on record holding that a common carrier may make a contract to transport merchandise, equipment, or materials for a stated and agreed price, and then later, sue the shipper and recover additional freight charges. In one case a trucking company hauled gravel for a company for five years, and then sued the gravel company to recover several thousand dollars, the difference between the price

agreed upon and the higher price specified by tariffs.

The higher court held that the gravel company must pay the additional charges because, irrespective of the contract between the carrier and the shipper, by which the carrier agreed to haul for cheap prices, the carrier could collect lawful freight charges specified in the tariffs.

For comparison see *B. & O. R. R. Company v. Illinois*, 46 N. E. (2d) 144. Here a common carrier filed suit to collect $9,801 from a shipper as balance of freight charges claimed to be due on a number of shipments of material. The shipper prepaid the freight charges at the export rate. The additional charges for which the suit was filed arose because the export rate was not applicable to the shipments, but that the domestic rate, which is higher than the export rate, was the one applicable under the tariffs.

During the trial the testimony proved that the bills of lading contained a no recourse clause, signed by the shipper, providing that the carrier should not make delivery of the shipments without receiving full payment for the freight charges.

Notwithstanding this clause, the higher court held the shipper liable for full payment of the unpaid freight charges, and said:

"Where the carrier manifests an intention to demand prepayment of the charges, the signing of the 'no recourse' stipulation by the shipper is ineffective. Delivery of the shipment does not change the primary obligation of the shipper to pay the charges. The shipper cannot, by signing the 'no recourse' stipulation, avoid its obligation to pay all of the charges, if through some mistake all of the charges are not collected in advance.

Blower System Avoids Liability

Several readers, from time to time, have asked for a higher court citation upholding law that installation of safety devices by an employer automatically reduces damage liabilities for illness and injuries to employees. Recently, I located such a case.

For illustration, in *Basye v. Odom*, 168 S. W. (2d) 1092, it was shown that an employee who had for several years worked in a plant, quit work because of an illness which later was diagnosed as bronchiectasis, which is a disease causing dilation of one or more of the large bronchial tubes.

The employee brought suit against his employer to recover damages for his illness and disability. He alleged that the room in which he was required to work was filled with a fine, powdery dust that completely filled the air, the breathing of which caused him to develop tuberculosis, sinus trouble, and bronchiectasis. The employee further alleged that his employer failed to exercise ordinary care in providing him with a reasonably safe place in which to work.

During the trial it was provided that at about the same time that the employee began his employment, the employer had a modern, up-to-date blower system installed to pick up or catch the dust and

American HAMMERMILLS
OFFER...
"AC5 Series"
Made in 4 sizes and two types. Capacity to 250 T. P. H.
Front Feed — For minimum of fines.
Center Feed — For maximum of fines. (Illustrated at left)
...A Size for Every Tonnage
"30 Series"
Made in 4 sizes. Capacity up to 100 T.P.H.
...from Roadstone to Agstone
"24 Series"
Made in 4 sizes. Capacity up to 30 T. P. H.
Write for Bulletin—"Better Stone Crushing"
American PULVERIZER COMPANY
Originators and Manufacturers of Ring Crushers and Pulverizers
1059 MACKLIND
ST. LOUIS 10, MO.

Drillers Report!

✔ MORE FOOTAGE
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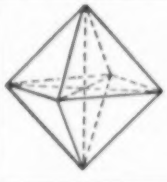
*with "Hard Vector-Oriented"**

DIAMOND BITS

by HOFFMAN BROS.

The diamonds are precision-set in Hoffman Bits so that the hardest cutting edge strikes the work at the proper angle. This means lower drilling costs due to longer bit life — faster cutting — and less power consumption per footage. Superiority proven by more than 2 years of rugged, production drilling in the field.



Expert bit setters at Hoffman Bros. blueprint diamond crystals before orienting them into the drill crowns. Drawing here shows octahedron crystal.

CONTRACT DRILLING SINCE 1902

With modern diamond drilling rigs located in more than 50 strategic areas, Hoffman Bros. is equipped to give you fast, expert results on coal, mineral and foundation test drilling. Immediate attention given to all estimate requests — at no obligation.

*Diamond setting principles followed by Hoffman Bros. are based directly upon extensive research and development performed by the U. S. Bureau of Mines.

Write today for complete information on Hoffman Oriented Diamond Bits—Free

HOFFMAN BROS. DRILLING CO., Inc.

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CUT COSTS FOR Bag Packing with

AUGER-MATIC

Fills and Weighs... All in *One* Operation

NO DUST

Cut production costs by packing your product in modern self-closing bags... the AUGER-MATIC Bag Packer fills them quickly to any weight desired... shuts off automatically.

NO WEIGHING

Valve Bags fit snugly on AUGER-MATIC spout so no dust escapes . . . keeps bags clean . . . eliminates costly tieing or bag closing equipment.

NO SEWING . . . NO TIEING

AUGER-MATIC Bag Packer is equipped with multi-twist auger . . . packs any materials from powder to pellets. Easily moved from one filling point to another.

Send for descriptive literature

E. D. CODDINGTON MFG. CO.

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blow it away. The testimony indicated that this system eliminated about 90 percent of the dust in the plant. In view of this testimony, the higher court refused to hold the employer liable in damages for the illness of the employee, and said:

"The law does not impose the burden on the master of making the servant's place to work safe or reasonably safe. If the place is not reasonably safe, still there is no liability on the part of the master if he has used reasonable care to make it reasonably safe. . . . Since the undisputed proof shows that appellant (employer) had exercised reasonable care to make the appellee's (employee's) place reasonably safe, the employer was not guilty of negligence as alleged."

Employee Works for Competitor

Another reader asked this question, as follows: "Is a contract valid and enforceable by the terms of which an employee agrees with his employer not to take competitive employment with a competitor?"

According to a late higher court decision, the answer is yes. This is so because a majority of higher courts recognize the fact that trade secrets, confidential information, lists of customers names, and the like are valuable property. Generally speaking, employment contracts are valid by which an employee agrees not to accept employment with a competitor for a reasonable period in the territory in which the present employer's customers or patrons are located. Generally, five years is considered by the courts as a reasonable period.

For illustration, in *Briggs v. Butler*, 45 N. E. (2d) 757, it was shown that a salesman was employed under a contract which contained a clause that the salesman would not for a period of five years from the date he left the present employment engage himself with another employer in the same or similar kind of business. Soon afterward the employee resigned and took employment with a competitor.

The ex-employer filed suit against the salesman and asked the court to grant an injunction to prohibit him from continuing the new employment with the competitor. The higher court granted the injunction, and said:

"The clear purpose and effect of the contract is to prevent or at least to limit the appropriation of the benefits of information and experience secured in service with the plaintiff (first employer) by becoming a direct competitor, as in fact did occur in this instance. We are of the opinion that under the facts disclosed by the record, the restrictive covenants of the contract entered into by and between the plaintiff (employee) and defendant (employer) do not impose a restraint beyond that reasonably required for the protection of the employer in his business . . . and are therefore valid and enforceable."

Must Have Consideration

A reader asked this question: "A land owner signed a contract on certain lands, giving our gravel company a lease. Now the land owner's lawyer claims the lease

Moderate cost . . . light on labor little maintenance . . . BUT

Crescent Scraper of 5-cu. yd. capacity—rigged for gravity return—shown returning to excavation point in the pit. Ask for Catalog A and Field Report 214.

SAUERMAN EQUIPMENT

Check digging power . . . rate of haul . . . clean dumping. Add labor economy . . . low upkeep . . . personnel safety . . . moderate power consumption. Total up the score . . . you'll choose one of these Sauerman Machines for your operation.

DRAG SCRAPER: *best* for pit or hill excavation, reclamation or general handling of materials, wet or dry. Serves as rapid, long range conveyor. Sizes ⅓ to 15 cu. yds.

SLACKLINE CABLEWAY: *best* for deep digging — especially underwater — and conveying to a high delivery point. Reaches down a hundred feet or more . . . spans up to 1000 ft. . . . sizes ⅓ to 3½ cu. yds.

DRAG SCRAPER STOCKPILER: *best* for profitable handling of sand and gravel, ores and chemicals. Low on first cost, plus economical one-man operation.

CRESCENT SCRAPER ON BOOM MACHINE: *best* for increasing the work capacity of any boom machine on backfilling and grading jobs. When scraper is used with track cable and trolley, machine range is greatly extended.

Call on Sauerman's *experienced* engineers for the size and type system *best* suited to your digging, hauling or materials handling requirements. Write for catalogs . . . ask for idea-packed Sauerman News.

Slackline cableway performs difficult excavation of non-caving material from deep pit. 70% rock and 30% colloidal sand posed tough digging job. Ask for Catalog C and Field Report 216.

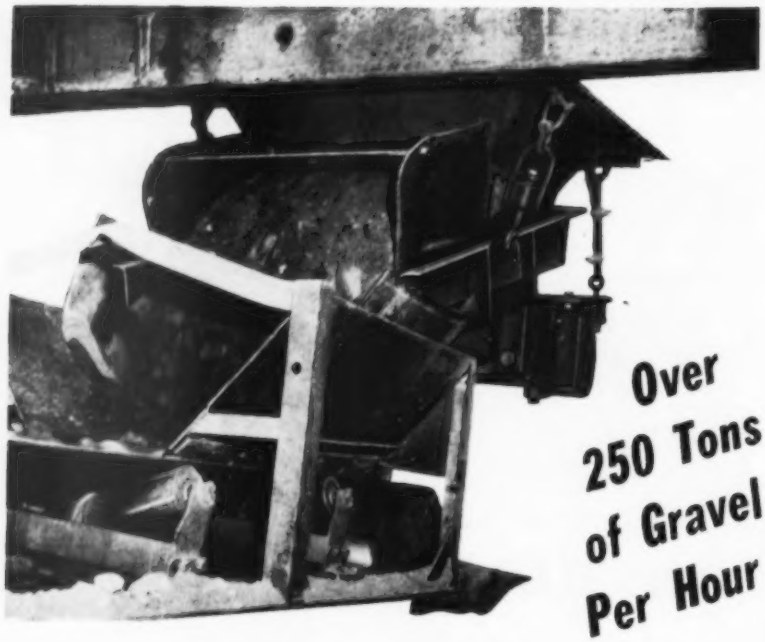
Two small scrapers reclaim different sizes of crushed stone from adjoining piles to belt conveyors delivering to a common hopper used to load cars with straight or mixed sizes. Ask for Catalog E.

Crescent on boom machine dumps large load of wet peat. Bucket is gravity-returned on track cable to digging point. Ask for Catalog J-1 and Field Report 219.

ONE-MAN MATERIALS HANDLING

SAUERMAN BROS., INC.

534 S. Clinton St., Chicago 7, Ill.



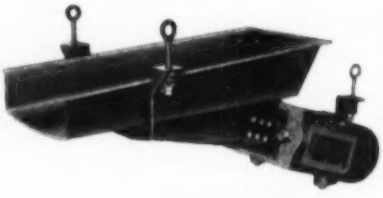
Over 250 Tons of Gravel Per Hour

with a SYNTRON

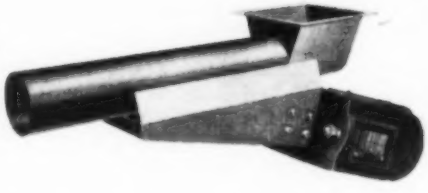
VIBRATORY FEEDER

Powerful electromagnets, vibrating 3600 times per minute, enable Syntron Feeders to handle huge quantities of heavy bulk materials with speed and economy. Vibra-flow design causes materials to flow like water. Finger-tip controlled feeding assures a smooth, even flow of heavy lumps or fine powders.

Syntron Flat Trough Feeders are available in models capable of handling up to 1200 tons per hour of heavy ore, rock, etc. Have no gears, cams, belts, etc. that require expensive replacement.



Tubular Trough Models increase the capacity of rotary kiln, drier and mixer operations where dust is a problem. Uninterrupted production with almost no trough abrasion.



Syntron Vibrating Grizzlies feed and coarse size in one operation. Grizzly bars are non-binding — tapered — wear resistant. Available with single or multiple magnets.

Write for complete catalog information — Free

SYNTRON COMPANY

385 Carson Avenue Homer City, Penna.

is no good, because we did not pay the land owner something when the contract was signed. Is such a thing possible?"

Recently a higher court held that a contract without "consideration" is void and unenforceable. Legally the term "consideration" means money, valuables, property, or any act or thing of *benefit* to a contracting party.

For illustration, in *Podesta v. Mehrten*, 134 Pac. (2d) 38, it was disclosed that a property owner signed a contract giving a leasee the right to remove at any time within 50 years the sand and gravel from the land, at a specific price. The contract permitted the construction and installation of gravel plants, structures, washing equipment, and a railroad over a designated route. The contract contained a clause acknowledging "valid consideration." However, the contract did *not* state the amount of money that the property owner had received on the contract.

Legal controversy began over the validity of the lease contract, and in holding the contract void, this court said:

"The question presented is an unusual one, and we have been unable to find any authority directly in point. . . ."

This higher court explained that if a contract signed by a property owner and leasee contains a clause listing the amount of money paid by the leasee to the property owner, this lease is valid. However, if the contract merely states, "for $1 and other good and valuable consideration," the contract is valid if proof is given that only $1 was paid; but if the contract states "for valid consideration", and the consideration is not clearly listed, the lease contract is void. Hence, for example, if a leasee pays money to a property owner, as "consideration", the contract must disclose the amount of money paid by the leasee to the property owner; otherwise the lease contract is void. This same relative rule of law is applicable to all contracts. In other words, a contract without "consideration" is void.

Officials Accept Defective Work

A reader asked this question: "If authorized officials of a state, county, or city accept and pay a contractor for defective work, is the contractor in any way liable? What I mean is: Can the officials later sue and recover money or damages from the contractor for fraud?"

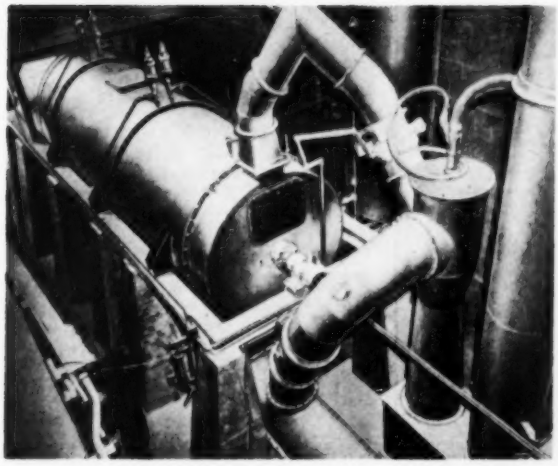
The answer is: Whether a court will decide that fraud exists on the part of state, county, or city officials in a litigation involving acceptance of defective construction work, depends upon the circumstances. The leading higher court case involving this point of the law is *Foulkes Co. v. Crowder*, 171 N. E. 304. Here it was disclosed that the council of a city entered into a contract with a contractor for public construction work. The specifications required the mortar to be made by mixing cement and sharp clean sand, and to contain not in excess of 10 percent of clay. Nevertheless, the contractor used sand having more than 10 percent clay therein.

A notification was given the city council by certain citizens that in this respect the work was defective, but the council

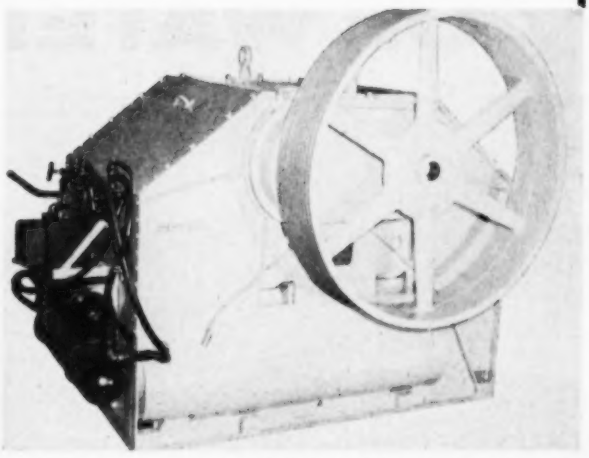
(*Continued on page* 175.)

A Review of

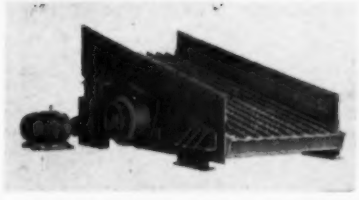
New Equipment Developed in 1953



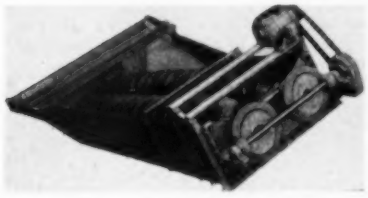
KENNEDY-VAN SAUN, New York 16, built this new type continuous lime hydrator for Lee Lime Co., described in the December PIT AND QUARRY.



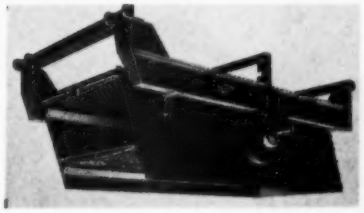
WALDRIP ENGINEERING, Hollydale, Calif., builds this new roto-crusher, said to eliminate slivers and flats from the crushed material.



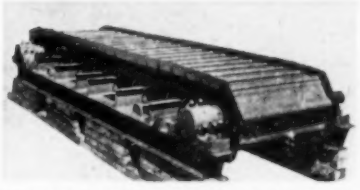
LINK-BELT, Chicago 8, brought out this new heavy-duty scalping screen, featuring many elements of smoother operation.



McLANAHAN & STONE, Hollidaysburg, Pa., introduced these washers for dewatering with capacities running to 250 tph, plus 100 mesh material. Single and double screws are made 20 and 25-ft. long.



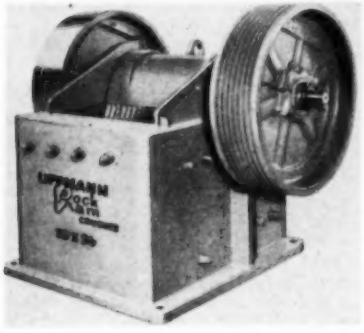
DIAMOND IRON WORKS, Minneapolis 11, unveiled this 5-ft. wide line of vibrating screens, in three lengths, 4 deck arrangements.



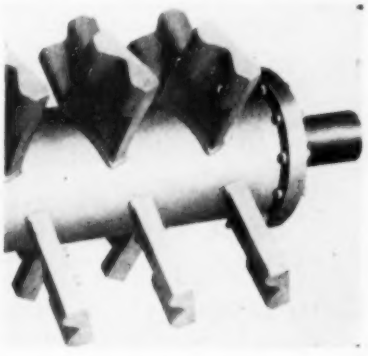
UNIVERSAL ENGINEERING, Cedar Rapids, Iowa, introduced this 9-in. pitch apron feeder, whose features include double sprocket teeth life.

LIPPMANN ENGINEERING, Milwaukee 14, introduced the Rock-Ram jaw crusher — slightly smaller than the Grizzly-King line. It is made in seven sizes from 10x16 to 30x36.

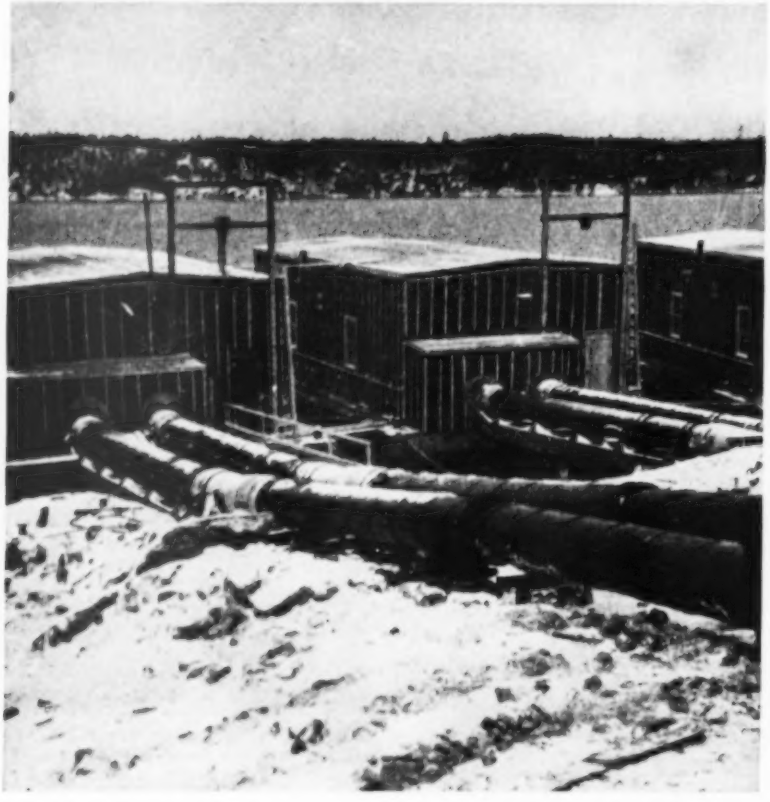
EAGLE IRON WORKS, Des Moines 13, introduced this tubular shaft for log washers, stronger than previous boxwelded types.



SYNTRON CO., Homer City, Pa., now makes this small vibratory feeder, capacity up to 500 lb. per hour.



THE EASY WAY TO GET RID OF WATER



Naylor light-weight pipe makes light work of getting rid of water. Its light weight makes Naylor pipe easy to handle and install, regardless of terrain. With its greater structural strength, you can count on plus performance in getting the job done.

Write for Bulletin No. 507 to get the whole story.

NAYLOR PIPE

Naylor Pipe Company • 1257 East 92nd Street, Chicago 19, Illinois

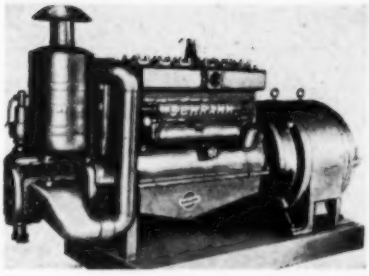
Eastern U.S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

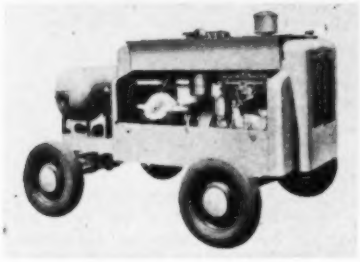
CATERPILLAR TRACTOR CO. introduced an oil-type flywheel clutch as standard equipment on some tractors. It is said to operate two to four times longer than dry clutches before major adjustment or overhaul is needed.

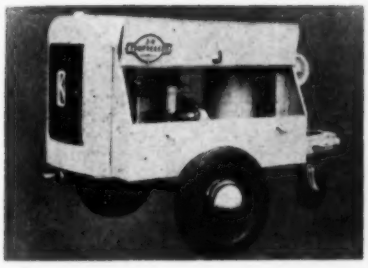
JONES AND LAUGHLIN developed a new principle in wire rope construction, for deep drilling. A coiled steel spring core flexes and resists crushing, and permits a reservoir of lubricant to exist through the length of the rope.

CLEVELAND VIBRATOR CO. added this portable vibrator with a two-inch piston to its line of air tools.

DELBERT WHEELER brought out a testing vibrator for field and laboratory use. Compact and light in weight, it handles sieves from 6 to 16-in. in diameter.





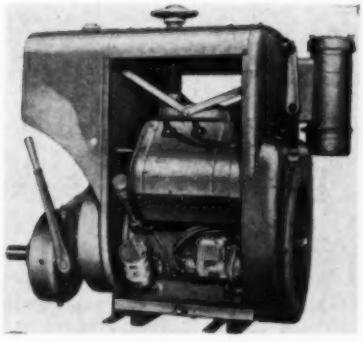


Among 1953's compressor developments were the Super Unistage (top left), whose 600-cfm makes it bigger than any previous SCHRAMM industrial unit.

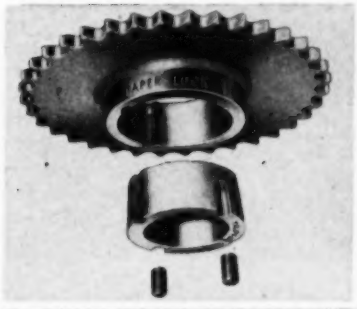
OK CLUTCH & MACHY. brought out a 75-cfm portable for light duty air service (top).

DAVEY COMPRESSOR announced extremely light portable units — the Super Chief 160, weighing 4300 lb. (left) and the 3400-lb. Super Chief WDS-210.

One of the electrical highlights of the year was GENERAL ELECTRIC's redesigned, modernistic Tri-Clad 55 line of motors, considerably smaller and more compact than their predecessors.



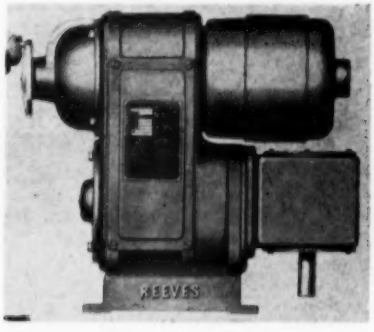
WISCONSIN MOTORS designed this lightweight 4-cycle engine for duty in the 25-36 hp class.

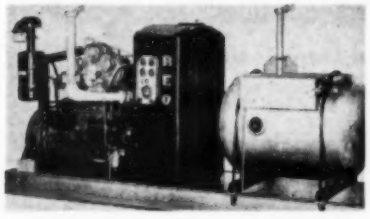


DODGE MFG. CO. developed the Taper-Lock line of sprockets and roller chain, featuring a mounting principle hitherto used on pulleys and sheaves (left).

REEVES PULLEY CO. introduced a variable speed drive with a right angle speed reducer built as one unit (below).

PHILADELPHIA GEAR WORKS builds instantaneous overload protection into its new HAT worm gear reducer (below left).





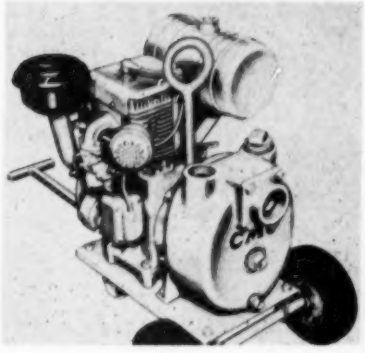
REO MOTORS entered the industrial engine field in 1953, introducing this line of 6-cylinder engines rated at 105, 120 and 240-hp for use with gasoline, natural gas fuel, LPG or dual fuel carburetion.

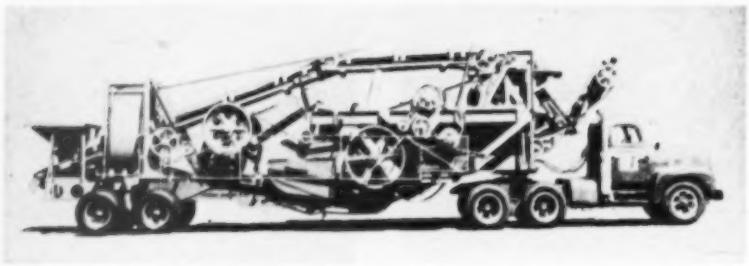
● Widen Engine Line

Seven new 6-cylinder models have been added to the *International Harvester* gasoline power unit line, which now includes 12 engines ranging from 16½ to 200-hp. The new valve-in-head power units include one natural gas model, 180-200 hp. at 1375-1600 rpm. The others are gasoline units that bring higher speed operations for direct power applications.

GALIGHER CO. brought out a new 1½-in. sump pump to handle sludge, etc. with heads up to 35-ft. and flows to 75-gpm (left).

CONSTRUCTION MCHY. builds portable, self-priming centrifugal pumps in sizes from 1½-4 in. (right).

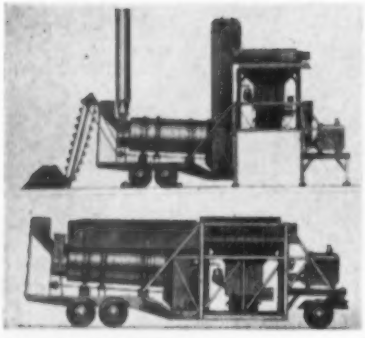




Among the year's portable crushing plants were the Diamond All American 77 (above) and the Pioneer 35-S duplex model (below).

DIAMOND IRON WORKS says the 77 will produce over 350-tph ¾-in. minus aggregate, using 36x22 roll and 10x36 jaw crushers. The vibrating screen has a hydraulic hoist.

PIONEER ENGINEERING fitted its unit with the largest possible components without sacrificing its fast-moving ability. It has a 10x36 jaw and a 30 x24 double roll crusher, and weighs under 60,000 lb.



STANDARD STEEL built into its new portable 1000-lb. batch-type asphalt plant (left) many of the features of its stationary plants.

IOWA MFG. CO. introduced this volumetric-type bituminous mixing plant, combining into a complete plant an MM mixing unit with single or twin shaft pugmill, and a gradation control unit.

● New Blasting Method

Loading alternate holes with low and high velocity explosives, and setting them off in conjunction with millisecond delay detonators forms a new blasting method. Developed by *Atlas Powder Co.*, as "alternate velocity loading", it is said to produce more breakage per pound of explosive and to give better control of throw.

● Time-Saving Rope Reel

Designed to save wire rope and dozer cable threading time, a bantam reel of tournarope is being offered by *LeTourneau-Westinghouse*. The 14-inch reel holds 150-ft. of 1½-in. rope. Used on scrapers for years, the system is now being adapted for tractors.

● Metal Detector

A metal detector especially engineered for quarries and mines has been announced by the Industrial Equipment Section, *RCA Victor*. The new device, normally installed between the primary and secondary crushers, consists of two units, the detector which creates a frame through which the material must pass, and the control.

● Improve Electric Screen

A design improvement has been announced for the Hanco electric screen as the result of exhaustive research by *F. R. Hannon & Sons*. It consists of a new type glass insulation used throughout the heater system to improve its efficiency and extend its life.

● Deep-Hole Percussion Drill

Said to be the first of its type designed especially for deep hole drilling, a new drill is being introduced to underground operations in the pit and quarry field by *Gardner-Denver*. Ring drilling, a cost-saving device recently popularized in mines, can be done with this new blast hole drill since it permits a 4-ft. change in a 7-ft. drift.

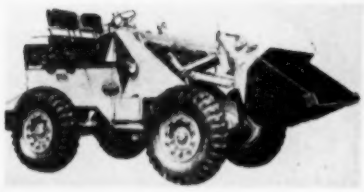
● Hard-Facing Alloy Rod

A hard-facing rod for high temperature applications has been announced by *Coast Metals*. The new alloy., "CM-118", is able to resist abrasion at temperatures encountered in hot rolling steel and similar applications. It will weld over itself and more ferrous materials without cracking, checking, or porosity, and so permits patching to be done.

● Build-Up Electrodes

Electrodes especially designed for build-up use on carbon and alloy steels to provide a base for a hard-facing overlay has been brought out by the *Stoody Co.* Stoody Build-Up is an extruded alloy-coated rod that produces an alloy steel deposit of 29-31 Rockwell C under normal conditions. It is not a hard-facing alloy but has a limited usefulness as a final overlay where impact is the principal wear factor, as in shafting, gears and tractor rails . The purpose of the electrode is to give high tensile strength, toughness, and resistance to cold flowing.

HARNISCHFEGER of Milwaukee, maker of the P&H excavators, brought out this lightweight Miti-Mite for truck-mounting as a crane, shovel, etc. It has hydraulic controls, 4-speed transmission and a 6-cylinder engine.



BAKER-LULL has built 4-wheel drive into this heavy-duty 1½-cu. yd. Shoveloader, which has several accessories besides the bucket, plus power steering.

MIXERMOBILE builds its loader in two sizes, one and two cu. yd. capacities, both with 4-wheel drive and 4-wheel steering.

Torque converter drive featured these loaders — the JAEGER Load-Plus 55-hp engine line in 4 sizes (above, left) . . . the PETTIBONE MULLIKEN Speedall 1½-cu. yd. unit (above) . . . and the entire line of HOUGH Payloaders (left).

LESSMAN MFG. CO. uses hydraulic power-crowding to give a 15,000 lb. forward thrust to its three loaders.

BROTT MFG. CO. brought out this 7/8-yd. loading shovel for TD-6 Internationals.

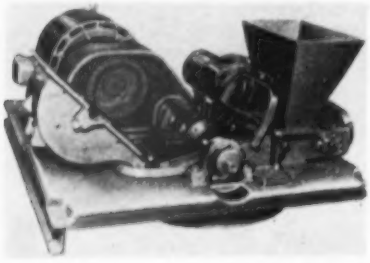
QUICK-WAY SHOVEL CO. of Denver built this diesel unit for places where low headroom and large rocks are a problem. The shovel is ⅝-cu. yd.

new machinery and supplies

PIT AND QUARRY

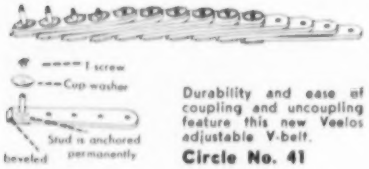
• Medium Fine Grinding

A new line of screen hammer-type pulverizers for medium-fine grinding has been developed by the Raymond Division of *Combustion Engineering*, Chicago 22, Ill. Called the Ray-Ducer, the new mill



is built in three sizes to handle a wide range of capacities. The compactly built mill, its feeder, motors, and variable-speed drive mount on a relatively small metal base, and are very accessible for servicing. An entirely new method for holding and changing screens is featured.

Circle No. 40



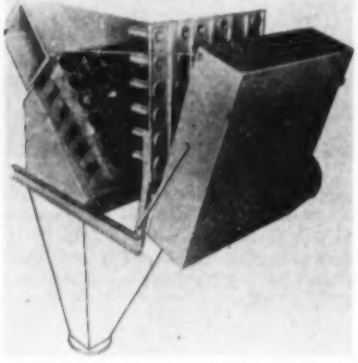
Durability and ease of coupling and uncoupling feature this new Veelos adjustable V-belt.

Circle No. 41

• Dust Collector

A determination test, at no cost, will be run by *Dustex Corp.*, Buffalo 25, N. Y., for any plant desiring to ascertain the scope of its dust problem and the dust collection equipment it needs. The firm makes two types of collectors in 27 standard models, handling volumes from 70-cfm and up. Cast aluminum, carbon steel or stainless steel is available for the tubes and bodies.

Operated on the controlled helical flow principle, the Dustex collectors are said to be so designed that no dust build-up

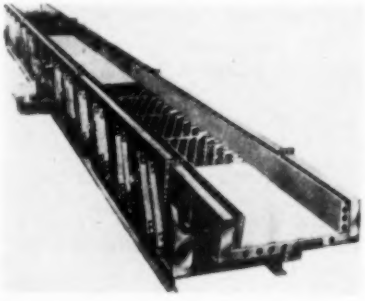


or plugging occurs even when dusts are sticky or fibrous in nature. One type, the Microclone, uses a hinged outlet hood and cover (shown) to facilitate inspection and cleaning.

Circle No. 42

• Vibrating Screen-Conveyor

A new line of vibrating conveyors and screens of the compulsory driven, swinging mass type, has been announced by *Syntron Co.*, 385 Carson St., Homer City, Pa. These Balanced Dual Trough units



feature two screens or troughs, mounted one above the other, connected by leaf springs, and the whole assembly supported on guide links, following the movement of an eccentric drive.

The conveyors, which can be fitted with screen sections, are made in two capacities: up to 80-t.p.h. in sections up to 65-ft. long with 20-in. troughs or up to 30-ft. with 40-in. troughs; and 280-ton capacity in 175-ft. sections 20-in. wide or 100-ft. sections 40-in. wide. Sections can be set in to any desired length.

Circle No. 43

• Michigan Tractor-Shovel Makes Debut

Newest entry into the front-end loader field is the Michigan tractor-shovel just unveiled by *Clark Equipment Co.*, Buchanan, Mich. The well-Known materials-handling machinery maker took over the Michigan Power Shovel Co., Benton Harbor, Mich., last May and added to this line the front-end loader that had been on the Clark boards for some time previous. Development of the new line was guided by a special team headed by C. E. Killebrew and Lowell Conrad, both with Frank G. Hough Co. at one time.

Six models in three major types comprise the Michigan loader line at present. Three feature 4-wheel drive with rear-wheel steering 1-, 1⅜-, and 2¼-cu. yd. capacities. Two others, 1-cu. yd. and 15-cu. ft. sizes, have rear steering and bucket wheel drive. Another 1-cu. yd. unit has rear drive and bucket steering.

The new line was designed with an "integreated approach" to provide great interchangeability of parts of among all units, Clark says. Most component parts are made by various Clark divisions.

Circle No. 44

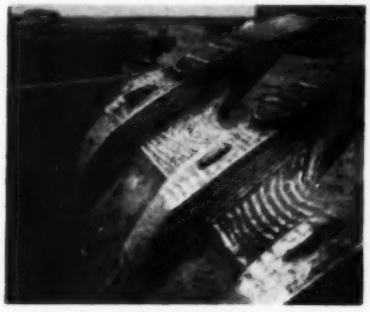
Want More Information on these items? Use prepaid request card on page 147.

● Specially designed for rugged mountain duty these 20-cu. yd. off-the-road Mack dump trucks carry 35 tons on 8 percent grades. Powered by 300-hp Cummins engines, they have Twin Disc converters and Parkersburg Hydrotarders for running downhill under load.

Circle No. 46

● Hard-Facing Electrode

Especially suited for hard-facing mining and crushing equipment, a new electrode, Coated Tube Stoodite, has been developed by *Stoody Co.*, Whittier, Calif., after two years of testing. Chromium and molybdenum are the principal alloys in the material, providing good resistance

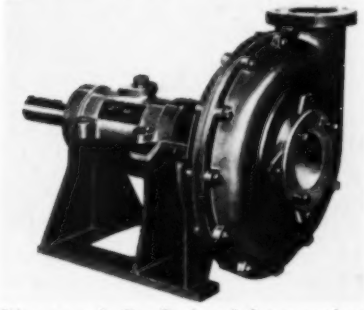


to all types of abrasion, high compression strength, and excellent impact resistance, Stoody says. Deposition is faster than with cast electrodes, and the deposit is smooth, sound, and free of pinholes or checks. The electrode is readily weldable to all carbon and alloy steels, including manganese, showing a Rockwell C hardness of 56-60 under normal welding procedure, either a.c. or d.c. Deposits are semi-austenitic and are not affected by ordinary heat-treat methods.

Circle No. 45

● Non-Diluting Pump

No sealing water is needed to operate the newly-developed Centriseal pump announced by *Allen-Sherman-Hoff* of

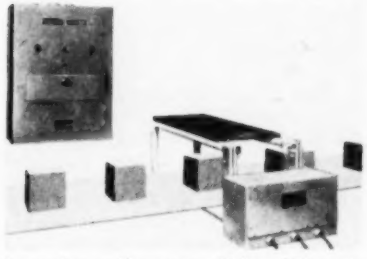


Wynnewood, Pa. Designed for pumping abrasive or corrosive solutions that must be delivered undiluted, the Centriseal also substitutes for A-S-H's Hydroseal pump wherever sealing water is unavailable. Pumping parts are protected with molded Maximum rubber, and mechanical parts are interchangeable with those of the anti-friction bearing type of Hyroseal units.

Circle No. 47

● Metal Detector

An electronic metal detector for belt conveyors has been developed by *General Electric*, and will be marketed by that firm and *Stearns Magnetic* of Milwaukee. The unit comprises two main components — a control cabinet and an



inspection coil system. Using 150-watts 105/125-volt, 60-cycle power, the system is built around 1½-in. dia. aluminum tubes attached to heavy aluminum straps on the junction box to form a bridge circuit which registers the presence of metal in the conveyor load. Visual signals on the control cabinet are actuated by the coil system, and in turn set off any desired audio, visual alarm or automatic control set-up. The cabinet is dust and moisture proof and can be locked against tampering.

Circle No. 48

● Low-Price Shovel-Crane

Previously engaged only in making truck-mounted shovel-crane rigs, *Schield Bantam* has unveiled its first crawler unit, due to sell considerably under $10,000. The ⅜-cu. yd., 5-ton unit, which has many features of truck-mounted Ban-

tams, when mounted on 16-in. pads has an overall width of 94-in. Its 15,522-lb. weight includes a 1400-lb. counterweight but no front-end attachment. The 16-in. pads have a ground-bearing pressure of 5 p.s.i. Also available are 24-in. ones having 3⅓ p.s.i. All standard attachments are available, and are interchangeable with Bantam's truck-mounted models.

Circle No. 50

● Bulk Testing Station

To help manufacturers of bulk granular materials to determine "without cost" whether or not their material can be successfully moved in bulk within their plants or from plant to plant by rail or trucks, the *Atkinson Bulk Transport Co.*, Minneapolis, has set up a testing station which will enable it to determine the practicality of "fluidizing" each product, the amount of air required, the size of pipeline or hose most suitable, the size of actuator required, etc. The Atkinson Fluidizing System, developed about a year ago for flour handling, has potential use in a number of pit-and-quarry industries.

Circle No. 51

● Mounted on a single chassis, this new 33R crushing-screening plant has the exclusive triple roll secondary crusher that enables it to make two almost simultaneous passes at the rock, Pioneer says. It has an 18x30 jaw crusher, an apron feeder and a 1½-deck sizing-separating screen. It weighs 71,000 lb. without power plant.

Circle No. 49

Want More Information on these items? Use prepaid request card on page 147.

• Aglime Spreader

Many new features designed to increase ease and efficiency of operation in the field are built into the recently revealed 1954 model New Leader twin-

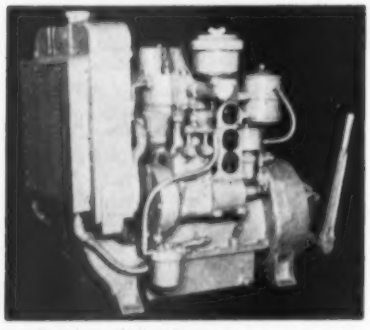
disc agricultural limestone spreader, *Highway Equipment Co.*, Cedar Rapids, Iowa, reports. Emphasis is placed on getting the aglime out faster, spreading it more evenly, and with less upkeep.

The new body has a greater payload, and has been redesigned for better weight distribution on modern trucks. A wide 24-in. conveyor permits a lower center of gravity, steeper sides forestall bridging of material, and a new steel construction gives greater strength with less weight, Highway Equipment says.

Circle No. 52

• Small, Light Diesel

Attempting to overcome size and weight factors that have limited the

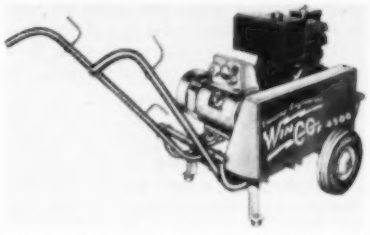


application of diesel power to many types of equipment, *Sheppard Diesels* of Hanover, Pa. has introduced a 2-cylinder engine that will develop 20-hp, at 2,000 r.p.m. Model 17 will fit a space 33 in. long, 22 wide and 31 high. It is being mass-produced to compete pricewise with gasoline engines. Suggested uses include pumps, transit-mix trucks, secondary engines and the like. Fuel savings and operational economies will make the Model 17 pay for itself in the first year of regular use, Sheppard claims.

Circle No. 53

• Engine-Generator

Stepped up continuous operating capacity (now 3,000 watts) has been announced for the F4500 portable engine-generator built by *Wincharger*



Corp., Sioux City, Iowa, division of Zenith Radio Corp. The F4500 has a motor starting capacity of 4,500 watts, supplying 115-volt, 60-cycle, single-phase a.c.

Circle No. 54

• Open-Top Scrapers Line

A new line of open-top, tractor-drawn, rubber-tired scrapers with capacities from 10½ to 28½ cu. yds. has been announced by *LeTourneau-Westinghouse*. The four sizes, for use with 70, 75, 80 or 100-hp. tractors, operate by a double drum power control unit whose two cables work through self aligning swinging sheaves. Positive ejection of material, heavy-duty roller bearings throughout protected by oil seals, a reversible hard-surfaced blade that is self sharpening, wheels mounted inside the cutting edge, and other features are incorporated in the new Carryall units.

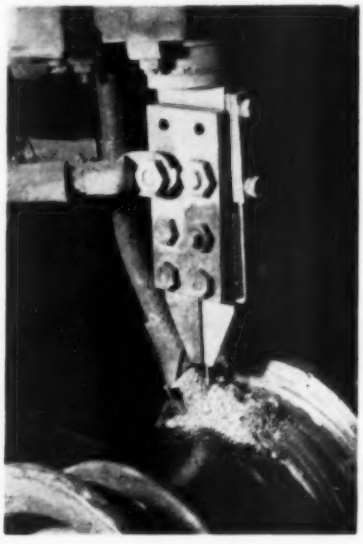
Circle No. 55

• Sizes for virtually every tractor made are found in the line of Austin Overshot loaders now being produced by the Galion Allsteel Body Co., Galion, Ohio. Recently purchased from a Denver firm, this loader performs through an overhead arc, requiring no movement of truck or tractor during loading.

Circle No. 56

• New Hardfacing Technique

A new method for automatic hard surfacing has been developed by *Lincoln Electric Co.*, Cleveland 17. The alloy content of the deposited metal is sup-



plied by an agglomerated granular flux rather than by the electrode, making it possible for the first time to apply automatic hard surfacing with conventional mild steel electrode, using the new flux. Tailor-made deposits are now possible and hard surfacing properties can be matched exactly to service requirements, Lincoln says.

Circle No. 57

• Wheel-Tractor Lugs

Extra drawbar pull and extended tire life are said to result from using Miracle Traction lugs on wheel tractors. Made by the *Baraboo Mfg. Corp.*, Baraboo,

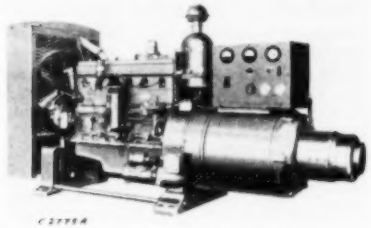
Wis., the alloy lugs provide up to 160 percent more drawbar pulling power, while increasing the life of the tires by about 400 percent, Baraboo says. Fastened to the rear wheels, the lugs extend beyond the tire, and are held in position by an automatic lock.

Circle No. 58

Want More Information on these items? Use prepaid request card on page 147.

● 50-kw Electric Plant

Expanding its line of gasoline engine-driven electric generator sets, a new 62.5-kva electric plant has been announced by *D. W. Onan & Sons,* Minneapolis 5. Designed for any job requiring heavy duty primary or emergency stand-by power, the unit will deliver a



full rated 50,000 watts at 80 percent power factor with ample overload capacity.

The generator is of drip-proof design, direct connected to the engine for permanent self-alignment. Voltage regulation is ±2.0. A special brush rig design features constant-pressure brush springs. Mounted over the generator is the control box, equipped with a charge rate ammeter, electric water temperature guage, electric oil pressure guage, start-stop buttons and running time meter. An automatic voltage regulator is installed inside the control box.

An International Harvester engine delivers 104-hp at 1800-rpm with a 450-cu. in. piston displacement. Replaceable cylinder liners, roto exhaust valves, oil bath air cleaner, a remote 12-volt starting system, water cooling, full pressure oil lubrication and a low oil pressure cut-off are among the other features of the rugged, heavy-duty engine.

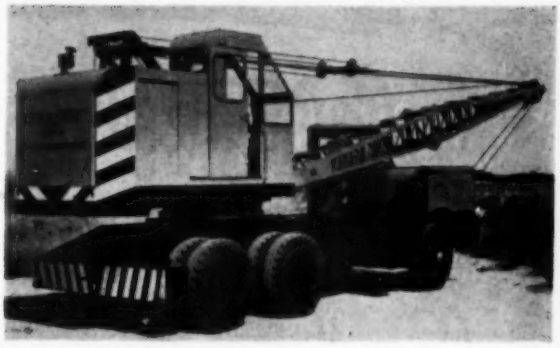
Circle No. 59

● Safer Blasting Cap

A static-resistant electric blasting cap, in a plastic case, developed by *Olin Industries,* East Alton, Ill. for the petroleum industry, offers attractive possibilities for quarry work and non-metallic mineral mining generally.

Called the Western Plastic Seismo cap, its case of molded plastic serves to insulate the RDX load against static and stray currents. The plastic make it less sensitive to rough handling than metal caps, does not suffer deterioration, and, should the cap explode, throws no shrapnel, since the casing disintegrates.

Circle No. 60

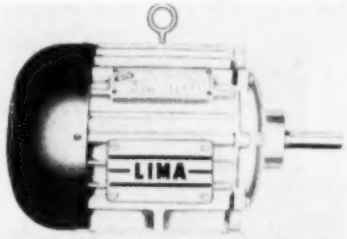


● Adding many engineering features, Quick-Way's light units (¼ to ½-yd. shovel) retain all the traditional simplicity and versatility of this line. Five convertible booms, new clutches and brakes, a new control cabinet and several other feaare built-in.

Circle No. 61

● Fan-Cooled Motor

A completely new design features a fan-cooled, totally enclosed motor line, Type E, now being made by *Lima Electric Motor Co.,* Dept. 193, Lima, Ohio. Sizes run from ¾-hp at 900-rpm



to 20-hp at 3600-rpm in NEMA frames 224 to 326. A specially-designed aluminum fan sends air at high velocity over the cooling fins, continuously blowing out any dust or foreign matter. Several other operational and structural features are built-in. Electrical characteristics include 2 or 3-phase, all standard frequencies and commercial voltages below 600-volts, as required.

Circle No. 62

● Clamp-Thimble Unit

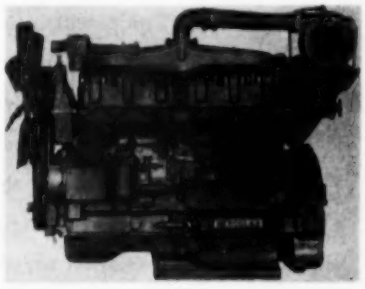
The heavier the load, the tighter the two halves of the Newco combination clamp and thimble are forced together, according to the producers of this new wire rope hardware unit, *Newman Mfg.*

& Sales Co., Kansas City 11, Mo. Eliminating all shear on the bolts, the Newco clamp has especially heavy bearing surfaces where hooks ride. Quickly installed, the thimble will not collapse, and hooks cannot ride up on the rope. It is made in 12 sizes for rope diameters to one inch.

Circle No. 64

● Turbo-Supercharged Diesel

Particularly suited to pit-and-quarry equipment in the 300-hp. class where a compact engine is important, a turbo-supercharged version of their 6-cylinder diesel engine is being built by *Hercules*



Motors, Canton, Ohio. The new unit fulfills the demand for more horsepower than the non-supercharged version without increasing fan-to-flywheel length. It has a 5⅛-in. bore, 6-in. stroke, 895-cu. in. piston displacement, and develops 846 lb. ft. torque at 1800-r.p.m., and 318 hp. at 2,000-r.p.m.

Circle No. 65

● Cell Puller

A useful device for removing cells from storage batteries for examination or repair has been developed by *Gould-*

National of Trenton, N. J. Hexagonal steel nuts brazed to U-shaped loops screw down over the lead posts and lift the cell free. Specially-cut threads in the nuts taper from bottom to top.

Circle No. 66

● Five models of the R-160 International truck are now being built with LPG (liquified petroleum gas) systems. The 108-hp units, in the 14-17,000 lb. GVW class, serve for medium and heavy hauling and over-the-road tractor service.

Circle No. 63

Want More Information on these items? Use prepaid request card on page 147.

Buy Guaranteed Efficiency in your Dust Collection... Consult Norblo

Guaranteed efficiency of fume and dust collection systems engineered and built by Norblo is obtainable because Norblo Equipment includes automatic bag type, improved centrifugal, and hydraulic types. Your operations may require one of these types — or all three! Norblo can tell you — will engineer the necessary combination to handle your dust and fume collection at most economical cost. More than 40 years experience serving many industries. State your problem so we can send literature on equipment applicable to your needs.

Norblo *Portable* Dust Collecting Units solve many localized problems.

Ask for Bulletin 163-5

The Northern Blower Company

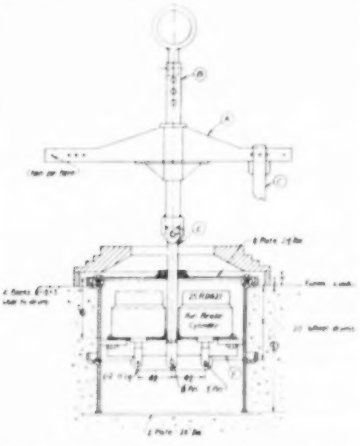
Engineered Dust Collection Systems for All Industries

6407 Barberton Ave. OLympic 1-1300 Cleveland 3, Ohio

Mount and Demount Your Tires by Air

Free plans are offered for two clever gimmicks devised by the *Autocar Division* of White Motor Co. for mounting and demounting tires. The devices cut both time and labor, and considerably increase worker safety in the maintenance shop.

One man now performs jobs that took two or three men before, with the new tire and rim mounting rig, Autocar says. It puts to work air and a hole in the ground—two elements not often asso-



ciated with success—to perform the job quickly with no danger to employee, tire, or rim.

The mounting device comprises a stepped down, circular casting set over a pit which holds two air-brake cylinders hooked up to a pressure spider that forces the side ring and the bead of the tire down past the locking-ring seat on the rim.

The demounter is also a one-man unit. It is basically an 8-armed spider mounted on a suspension frame and operated with an air cylinder. Autocar says it can take off the biggest and toughest sticky tire with the ease of a doughnut hole puncher. The spider and compressed air do the work with big savings in time, effort, and tempers.

You can get plans for both devices by writing the public relations department, Autocar Division, White Motor Co., Ardmore, Pa. Mention this news item.

David G. Stenberg, formerly general commodity manager at National Gypsum's headquarters in Buffalo, will assume the duties of central division manager, a newly-formed division covering the Minneapolis, Chicago, Detroit, Cleveland, Pittsburgh, and Buffalo sales districts. His will be the largest sales division of the company in area, in personnel, and in volume of sales.

Prior to joining National Gypsum in 1939, Mr. Stenberg was assistant sales manager of the Justice Motor Corporation in Buffalo. Starting as a salesman, he has subsequently served National Gypsum as district manager for the Detroit and Chicago sales districts, as well as commodity manager for masons' supply sales.

Legal Decisions

(*Continued from page 164*)

accepted the work and paid the contractor part of the money due. The property owners filed suit and the court invalidated the acceptance of the work by the council, saying:

"The action of the council in accepting the improvement with full knowledge of such facts, and in face of the objections thereto, was arbitrary, capricious, and unjustifiable, and operated as a fraud upon each of the plaintiffs (property owners)."

Arbitrary Interference

A reader asked this question: "If a contractor is unable to complete a job within the limited period specified in the contract, is he subject to payment of penalties although he proves that his delay was caused by interference or arbitrary demands or rules of the owner, or his agent?"

According to a late higher court decision, the answer is no. This is so because courts holds that a construction contract is automatically cancelled where the owner is permitted to have improper or fraudulent or arbitrary control over the contractor.

For example, in *Goodrum v. State*, 158 S. W. (2d) 81, a named engineer was designated by state authorities to supervise certain construction work, to be performed for the state.

During the work the engineer refused to authorize the contractor to obtain gravel from a certain pit nearby unless the contractor signed a contract agreeing to withdraw all claims for extension or credit in working time. Due to this requirement, which the contractor refused to sign, the contractor was delayed in completing the job, and the state withheld the sum of $4,175 from the contractor by way of penalties for not completing the job within the number of days specified in the original contract.

The higher court held the contractor entitled to full payment because the delay in completion was caused by the unreasonable and arbitrary restriction placed upon him by the engineer, which resulted in the contractor having to obtain gravel from a pit inconveniently located.

Employer Not Negligent

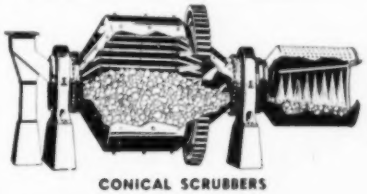
The following question was asked by another reader: "If an employee sustains an injury because the employer failed to supply him with safe and efficient and modern tools, does this failure always result in the employer being liable to the employee?"

The answer is: An employer may be liable in damages for negligence in failing to supply employees with reasonably safe tools, *only where it is shown that the employee was injured as a direct result of the employer's negligence.* The law expects workmen to exercise due diligence and care to prevent injuries, and a failure to exercise this degree of care relieves the employer from liability.

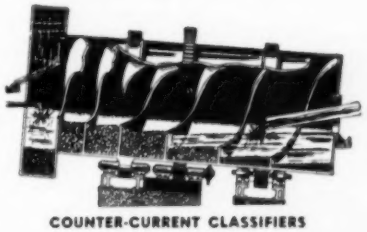
For example, in *Mosley v. Raines*, 37 S. W. (2d) 78, it was disclosed that an employee in a rock quarry was seriously injured when he was attempting to break a slab of rock by ramming a piece of railroad iron against it. The employee sued the employer for damages, contending that the injury resulted from the latter's failure to provide suitable tools and a safe working place. However, the court decided that an ordinarily careful employee would have realized the danger associated with attempting to break the slab by the use of a railroad iron, and held that he had failed to exercise reasonable care to prevent injury to himself. Hence, the court held the employer not liable, and said:

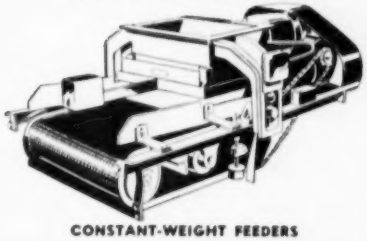
"The master owes the servant the duty to exercise reasonable care in furnishing a safe place to work and safe tools and appliances. . . . The master (employer) is not only bound to exercise reasonable care to furnish a safe place to work, but the servant (employee) has a right to assume that the master (employer) has performed his duty. It is, however, also thoroughly established by the decisions of this court that the employer is presumed to have performed his duty, and the employee cannot recover for an injury unless he shows that the employer was guilty of negligence and *that the negligence of the employer* caused his injury."

Notwithstanding this favorable verdict, readers should realize that all courts hold that an employer may be held liable in damages for an injury to an employee who sustained the injury while using reasonable care, if the testimony shows that the employee would not have been injured had the employer furnished safe and adequate tools or equipment.

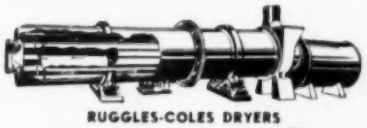

CONICAL SCRUBBERS

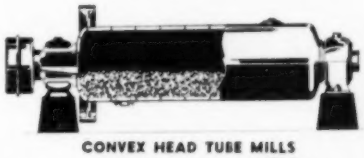
CONICAL AND TRICONE MILLS

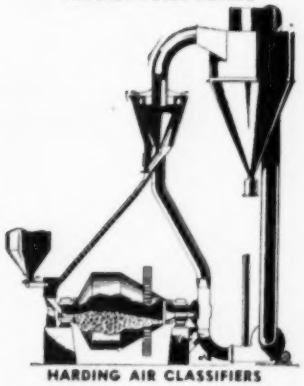

COUNTER-CURRENT CLASSIFIERS

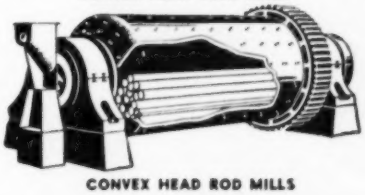

CONSTANT-WEIGHT FEEDERS

"AUTO-RAISE" THICKENERS


RUGGLES-COLES DRYERS


CONVEX HEAD TUBE MILLS


HARDING AIR CLASSIFIERS


CONVEX HEAD ROD MILLS

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Must Comply With Law

Modern higher courts consistently hold that a company which desires to perfect a mechanic's lien to secure payment for labor or materials must fully comply with valid laws, rules, and regulations, otherwise the lien is rendered void.

For example, in *McClung v. Griffith*, 255 Pac. (2d) 973, the Central Mix Concrete Company filed suit for the foreclosure of a mechanic's lien, to secure payment from a property owner for concrete used to improve the property.

Due to technicalities 26 days elapsed after the hearing before any formal order was signed. During this time nothing was done by the counsel for one of the litigants. The higher court held that this failure forfeited the litigant's right to a mechanic's lien, saying:

"In the instant case there is a complete failure to comply with this rule."

traffic news

CENTRAL TERRITORY RAILROADS
Freight Traffic Committee

Docket 90042 (2)—Proposed to establish on limestone, that is crude, fluxing, foundry, or furnace, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply from Cleveland, Ohio, to Erie, Pa., 190 cents gross ton.

Docket 90051 (1)—Proposed to establish rate of 238 cents net ton on stone, crushed, carload, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Findlay, Ohio, to Pinconning, Mich.

Docket 90056 (1)—Proposed to establish on sand (other than bank, glass, molding, silica, blast core, engine, filtering, fire or furnace, foundry, grinding or polishing or loam sand) and gravel, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Goshen, Ind., to Chicago, Ill., and Gary, Ind., 83 cents per net ton. Includes ExParte 162, 168 increases but subject to ExParte 175-B increase.

Docket 90093 (1)—Proposed to establish rate of 108 cents per net ton to meet motor truck competition on crushed stone and crushed stone screenings, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from St. Paul, Ind., to Lebanon, Ind.

GENERAL FREIGHT TRAFFIC COMMITTEE
Eastern Railroads

Bulletin C 1513 -3 (Carrier) — Proposed to establish on lime, common, hydrated, as described in Agent Hinsch's tariff 516-L, ICC 4397 from Mosher-Ste. Genevieve, Mo., to Spencer, W. Va., 38 cents per 100 lb., minimum weight 15 tons and 32 cents per 100 lb., minimum weight 25 tons. Subject to X-175-B increase.

Bulletin C 1513 -4 (Shipper) — Proposed to establish rate of 29 cents per hundredweight on 15 tons and 24 cents per hundredweight on 25 tons lime, common, hydrated, as described in Agent Hinsch's Tariff 516-L, ICC 4397 from Mosher-Ste. Genevieve, Mo., to Salem, Ind. Subject to ExParte 175 increase.

Bulletin N 1513 -5 (Carrier) — A - Lime, common, hydrated, quick or slaked, carload minimum weight 15 tons. B - Lime, common, hydrated, quick or slaked, carload minimum weight 25 tons. C - Mortar, dry, building, carload minimum weight 15 tons to Teays, Ohio,

	A	B	C
From Kimballton and Ripplemead, Va.	$5.82	$4.72	$5.38
From Oger and Tazewell, Va.	$5.48	$4.35	$5.09
From Riverton, Va.	$6.69	$5.67	$6.25

Rates per net ton and subject to X-175-B increase.

Bulletin N 1609-2 (Carrier) — Proposed to establish on limestone, crude, fluxing, foundry or furnace, in open-top

THERE ARE MANY Dump Bodies

Construction men, dump truck operators, and general builders are choosing Converto by an ever increasing margin. These are the men who have helped in the designing of the complete line of medium and heavy-duty hoists and bodies. They know that the rugged construction and versatile design of these units means longer, more trouble-free life. Converto hoists and bodies are flexible — easily adapted to perform special jobs.

All Converto Dump Bodies and Hoists carry many outstanding features as standard equipment, which are optional at extra cost on other makes of dumping units . . . proof that you can make every load a bigger payload with a Converto.

LOOK AT THE EXTRAS

- Full 60° dumping angle
- Full width cross members
- Completely welded throughout
- 8 gauge steel floor
- Extra-powerful hoists*

* All Converto hoists are tested to far exceed minimum lift requirements

...BUT ONLY ONE

CONVERTO MANUFACTURING CO.
CAMBRIDGE CITY, INDIANA

Converto

equipment, carload minimum weight 90 percent of marked capacity of car, etc., from White Pigment Corporation Siding, Pa., to Youngstown, and Warren, Ohio, $2.32; Canton, Massillon, and Cleveland, and Buffalo, N. Y., $2.51. Rates per gross ton, subject to X-175-B increase.

Bulletin N 1609 M-3 (Shipper)—Proposed to establish rate of $1.61 per net ton on limestone, agricultural, unburned, in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car from Buffalo, N. Y., to Portville, Westons, Allegany, and Cuba, N. Y. Subject to X-175 -B increase. To be issued to meet motor truck competition.

Bulletin C 1609 -4 (Shipper) — Proposed to establish on limestone, ground or pulverized, carload minimum weight 30 tons, to Des Moines, Iowa, from the following points:

	Rates per Net Ton, In Open Cars	In Closed Cars
Bedford, Ind.	$4.63	$5.12
Bloomington, Ind.	$4.39	$4.88
Greencastle, Ind.	$4.27	$4.76

Subject to X-175-B increase.

Bulletin C 1513-6 (Shipper)—Proposed to establish rate of 66 cents per 100 lb. on lime (common hydrated), quick or slaked, in bags, barrels, or bulk, carload minimum weight 25 tons, from Ludington, Mich., to Marathon, Ont. Subject to X-175-B increase.

Bulletin C 1609-6 (Shipper)—Proposed to establish on limestone, ground or pulverized from Marble Cliff, Ohio, to Jeff, Ky., carload minimum weight 30 tons, $3.34 per net ton in open-top cars and $3.84 per net ton in closed cars. Subject to X-175-B increase.

ILLINOIS FREIGHT ASSOCIATION

Docket IRC 511-1316—Proposed to establish rate of 77 cents per net ton on agricultural limestone, carload, from Lehigh, Ill., to Stewart, Ind., applied intermediately and to be published in New York Central tariff 1902-A. Subject to X-175-B.

Docket IRC 511-1317—Proposed to establish on stone, broken, crushed or ground, carload, from Hannibal and White Bear, Mo., and Marblehead and Quincy, Ill., to Herrin, Ill., $2.46 per net ton when shipped in open-top cars not protected by a protective covering, and $2.63 per net ton when shipped in closed cars or open-top cars protected by tarpaulin or other protective covering. Subject to X-175-B increase.

Docket IRC 511-1318—Proposed to establish on limestone, ground or pulverized (agricultural limestone), carload, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight applies. Rates are in cents per net ton and subject to X-175-B increase.

To I.C.RR. Illinois Stations	From Krause, Ill. Proposed
Representative points	
Church, Belleville, Freeburg, Marissa	65
Stanwick, Pinckneyville	72

NORTH PACIFIC COAST FREIGHT BUREAU

Docket NC-3371 (Supplement 2) (S)—Proposed to establish rate of 25 cents per hundredweight on gypsum, crude, crushed, ground or powdered, carload, Ellisford, Wash., to Lewiston, Idaho, and Goldendale, Wash. Not subject to X-175; minimum 50 tons.

Docket NC 3380 (Supplement 1) (S)—Request to establish on stone, building, flagstone, veneer flagstone strips, cut wall stone, carload, from Oakley, Idaho, to Portland, Oreg., and Seattle, Wash., 52 cents per hundredweight to Portland and 58 cents per hundredweight to Seattle, Wash.; minimum 50 tons.

Docket NC 3628 (S)—Request rate of 14 cents per hundredweight on limestone, in open cars, carload, from Jacques, Idaho, to Camas, Wash., and 18 cents per hundredweight to Seattle and Everett, Wash.; minimum 50 tons.

Docket X NC 3646 (S)—Proposed to establish on sand and gravel, carload, from Spokane, Wash., to Lauer, Jantz, and Schoonover, Wash., 8 cents per hundredweight; minimum 60 tons. To expire July 31, 1954.

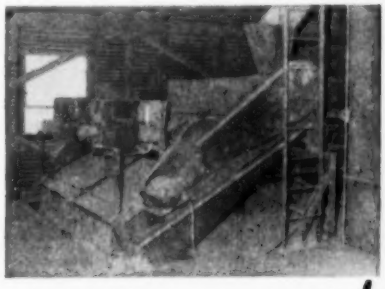
Docket NC-3656 (S)—Request rate of 8 cents per hundredweight on sand and gravel, Item 100 NPCFB tariff 25-N), carload, from Irvin, Wash., to Odessa and Mohler, Wash., and 6 cents per hundredweight to Harrington and Downs, Wash.

NC-1364 (Supplement 1) — Request rate of 22 cents per hundredweight on gypsum rock, crude, carload, from Lake Windermere, B. C., to Metaline Falls, Wash.

Docket NC 3607 (S) — Reopened docket requesting reduction in rates on limerock, carload, Durkee, Oreg., to Camas, Columbia Junction, and Longview, Wash.

FlexElex

ELECTRIC HEATING



PAYS ITS WAY READILY

For fine mesh screening of damp materials such as lime, ag-lime and silica sand, FlexElex electric heating on a Leahy No-Blind Vibrating Screen pays for itself in a matter of months.

By keeping the mesh wide open for full capacity, accurately sized production, the savings are obvious to anyone.

By elminating hand cleaning operations, the labor savings are substantial.

Prolonged life of the screen cloth greatly reduces jacket replacement costs and outage time. With virtual elimination of idle time you net greater capacity and production.

The sum total of these advantages represents a profit factor it will pay you to investigate. Send for full information.

THE Leahy

THE DEISTER CONCENTRATOR COMPANY

The Original Deister Co., Inc. 1906

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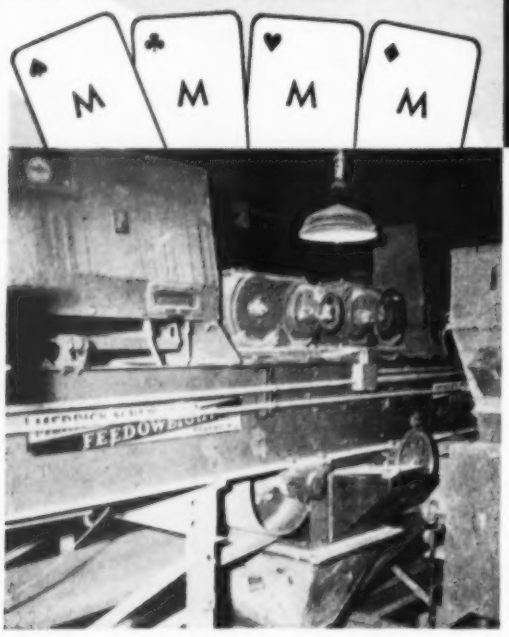
"FOUR OF A KIND"
. . . sure winners for accurate feeding

MERRICK SCALES



installed in the Davenport, Iowa plant of the DEWEY PORTLAND CEMENT COMPANY

Write for Bulletins 375, and 253

The Dewey Portland Cement Company recently enlarged their plant, a 3-kiln operation producing 2,700,000 barrels of cement per year.

Two new finish mills were installed, each equipped with two MERRICK Type WS Feedoweights*. One MERRICK unit feeds clinker, the other, gypsum.

MERRICK Feedoweights automatically and continuously feed and proportion raw materials to process by weight, thereby insuring product uniformity.

MERRICK Weightometers* are employed with existing belt conveyors to automatically and continuously weigh materials in transit.

*Registered U.S. Patent Office

MERRICK SCALE MFG. CO.
180 AUTUMN STREET • PASSAIC, NEW JERSEY

TRADE MARK
Clip-as-Rip
BELT LACING

BELT LACING for: all conveyor belting ¼" to ⅞" thick.
THE DUAL PURPOSE LACING for PATCHING & SPLICING
No Special Tools Required: JUST A HAMMER
Write for Bulletin and name of Jobber
THREE POINT BELT LACING CO.
Peace Dale, R. I.
Formerly Mfg. By The Bristol Co.

PACIFIC SOUTHCOAST FREIGHT BUREAU

Docket X 4194 (S)—Proposed to establish on gypsum, carload, from Colado, Woolsey, and Oreana, Nev., to California points, rates and minimum weight same as published from Lovelock and Kodak, Nev., to California in Item 1907-B of Pacific Southcoast Freight Bureau 273-A.

Docket 4211 (S)—Request rate of 90 cents per ton of 2,000 lb. on lime rock, crude, crushed, ground or powdered, carload, from Ellerbeck and Dolomite, Utah, to Midvale, Utah. Minimum weight marked capacity of car.

Docket X 4225 (S)—Request rate of 14 cents on rock, crushed, in bulk, in open cars, from Hector, Calif., to Bassett, Calif. Minimum weight not specified.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 16389 (c)—Proposed to establish on stone, that is, limestone or marble, broken, crushed, ground or pulverized, 80 percent or more of which will pass through U.S. No. 8 screen, in open-top cars, not covered with protective covering, described in item 430-B Southern Freight Bureau tariff 388-H, from Rocky Point, Va., to Charleston, S. C., 250 cents per net ton. Not subject to X-162-6-8 increase.

Docket A 16402 (c)—Proposed to establish on sand, carload, in closed cars, minimum as per item 400-B Southern Freight Bureau tariff 388-G to Memphis, Tenn., from Camden, Tenn., 180 cents net ton; Hollow Rock, Lipe, and Sawyers Mill, Tenn., 170 cents net ton. Not subject to X-162-6-8 increases.

Docket A 16405 (a)—Proposed to establish on limestone, ground or pulverized, carload, 30 tons, from Cartersville, Ga., to Duluth, Minn., and Superior, Wis., 911 cents in open-top cars, not protected, and 958 cents in closed cars or open-top cars protected by a covering; Sparta, Tenn., 876 cents in open-top cars not protected, and 923 cents in closed cars or open-top cars with tarpaulin.

Docket A 16423 (C)—Proposed to establish rate of 364 cents per net ton on sand, carload, all kinds of equipment, from Marion, Ky., to Olive and Hill, Ky., and 376 cents per net ton to Ashland, Ky. Not subject to X-162-6-8 increases.

Docket A 10914 (Southwestern Freight Bureau Proposal 66279)—Proposed to establish on rock, phosphate, carload, 50 tons, from Florida producing points to Crocker, Mo., 954 cents per gross ton. Not subject to X-162-6-8 increases.

SOUTHWESTERN FREIGHT BUREAU

Docket 66448 (X) (S)—Proposed to establish rate of 56 cents per ton, minimum weight 15 tons, and 48 cents per ton, minimum 25 tons, on lime from Dettlinger, Tex., to Johnstown, Colo. Both rates not subject to X-162-6-8 increases.

Docket 66509 (S)—Proposed to establish rate of 888 cents per gross ton on phosphate rock, Florida Mines, to Jackson, Mo.; minimum 50 tons or marked capacity of car, if less. Not subject to X-163-6-8 increases.

Docket 66514 (S)—Proposed to establish on lime, common, hydrated, from Mosher-Ste. Genevieve, Mo., to Spencer, W. Va., 38 cents, minimum 15 tons; and 32 cents, minimum 25 tons. Not subject to X-162-6-8 increases.

Docket 66606 (S)—Proposed to establish on lime, common, hydrated, from Mosher-Ste. Genevieve, Mo., to Salem, Ind., 29 cents, minimum 15 tons; and 24 cents, minimum 25 tons. Not subject to X-162-6-8 increases.

TRANS-CONTINENTAL FREIGHT BUREAU

Docket B-531 (S)—Proposed to establish temporary rate of 75 cents on refuse screenings, carload minimum 30 tons, from Vancouver, B. C., to Kansas City, Mo. Item 1320 tariff 45. Not subject to X-162-6-8-175 increases.

Supplement 3 to NM&A N/C 1368 (S)—Proposed to establish on gypsum or gypsum rock, crushed and/or pulverized, ground, not powdered, in bulk or in bags, carload, Rotan, Tex., to Phoenix, Ariz., 24 cents; and Yuma, Ariz., 29 cents, minimum 40 tons. Rates not subject to X-162-6-8 increases.

Docket X-B-573 (S)—Publish alternating rate of 72 cents, minimum 50 tons, on common lime, including magnesium lime, hydrated, quick or slaked, carload, from Genoa, Ohio, to Pacific Coast, item 4076 Tariff 1. Not subject to X-162-6-8 increases.

FREIGHT TRAFFIC COMMITTEE
Trunk Line Territory Railroads

Bulletin N 4613 M-1 (Shippers)—Proposed to establish on rip rap stone, in open-top cars, carload minimum weight 90 percent of marked capacity of car from Kingston, N. J., to Highlands, N. J., $1.20; from Lambertville, N. J., to Highlands, N. J., $1.42. Rates per net ton. Subject to X-175-B increase. To be issued to meet motor truck competition.

Bulletin N 4614 M3 (Carrier)—Proposed to establish on slag, crude or crushed, in bulk, minimum weight 90 percent of marked capacity of car from Sparrows Point (Baltimore) Md., to Annapolis, Md., $1.35 per net ton. Subject to X-175-B increase. To be issued to meet motor truck competition and to expire December 31, 1955.

Docket N 4614 M (Shipper)—Proposed to establish on slag, unsuitable for further extraction of metal, not granulated, carload minimum weight 90 percent of marked capacity of car from Bethlehem, Pa., to Philmont, Pa., $1.38 per net ton. Subject to X-175-B increase. To be issued to meet motor truck competition and to expire with February 28, 1954.

WESTERN TRUNK LINE COMMITTEE

Docket X-D-25-389 (S)—Proposed to publish rate on lime (calcium) that is, common lime, including magnesium lime, hydrated, quick or slaked, carloads, 56 cents minimum 15 tons, and 48 cents per hundredweight, minimum 25 tons. Both rates subject to X-175-B increase.

Docket X-E-41-1926 (C)—Proposed to establish rate on lime rock, crushed, ground, broken, $3.07 per net ton in open cars and $3.56 per net ton in closed cars or open-top cars covered with a protective covering, from Alden, Iowa, to Grand Island, Nebr., minimum weight proposed 90 percent of marked capacity of car, except that when weight of shipment loaded to full visible capacity of car is less than 90 percent of marked capacity of car, actual weight will apply, but in no case will the minimum weight be less than 30 tons. The rates are subject to X-175-B increase.

$575,000,000 for Highways

(*From page* 85)

partment's Bureau of Public Roads according to the general procedure in use for many years in which state highway departments propose projects, prepare plans, award contracts, and supervise construction, all subject to federal approval. Federal participation is limited to half the cost, except in the public lands states, where participation may be increased above 50 percent by one-half of the percentage of the area of the state that is public land.

Funds for the Federal Aid primary highway system are apportioned in proportion to area, population, and mileage of post roads, each being given equal weight. Funds for Federal Aid secondary roads are apportioned in the same manner, except that rural population is used rather than total population. Funds for urban projects are apportioned in proportion to population in municipalities and other urban places of 5,000 or more. Funds for the Interstate System are apportioned in the same manner as those for the Federal Aid primary highway system. The funds apportioned will be available for expenditure until June 30, 1957.

Bemis Bro. Bag Co., St. Louis, Mo., has purchased all outstanding stock of the Flexible Package Co., Chicago, Ill. The company will operate under its present name as a Bemis wholly-owned subsidiary, with the same managerial and operational personnel.

Mine and Smelter Supply Co., Denver, Colo., has been appointed a representative in Utah and parts of Wyoming by Barber-Greene Co., Aurora, Ill. Albert Seep is president with W. J. Berryman, manager of the Salt Lake City, Utah, branch.

H. K. Porter Co., Inc., Pittsburgh, Pa., has acquired the Alloy Metal Wire Co., Prospect Park, Pa., which will be operated as a special division of the parent company. Alloy Metal Wire Co. Division will produce stainless and alloy steel wire, rod and strip for use in the electrical, electronic, and chemical industries.

Marlin G. Geiger, vice-chairman of the board of directors was elected president and chief executive officer of the Davison Chemical Corp., Baltimore, Md., following the resignation of R. L. Hockley.

Hunley A. Slaughter, Memphis Tenn., and the R. C. Brown Co., Dallas, Texas have been appointed representatives in the Texas and Arkansas-Mississippi areas for Farrell-Cheek Steel Co., Sandusky, Ohio.

IT COSTS NO MORE TO USE THE BEST

REPLACE WITH

"Indian Brand"

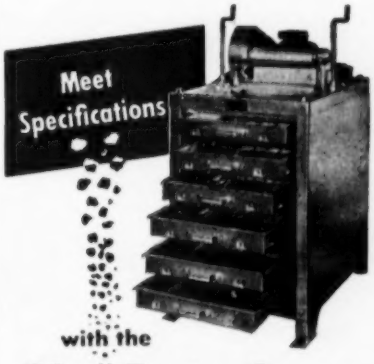
MANGANESE STEEL
Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881



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Gilson Testing Screen

The GILSON Screen cuts out error and guesswork in meeting sizing specifications for crushed stone, gravel, slag, coal, ores, and similar materials.

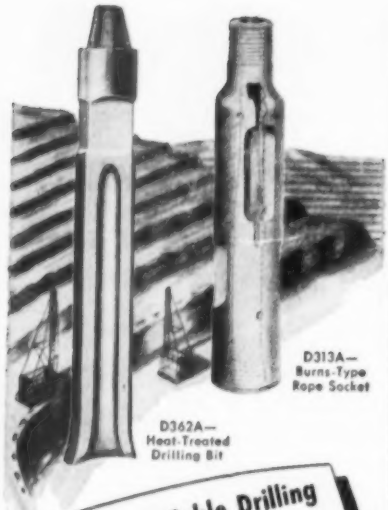
You can own and maintain a GILSON Screen for only 65-cents per 1,000-tons production in your plant, according to our sales and service records.

For Research Projects, too—the GILSON Screen is the answer to moderate-scale mass separation jobs.

WHY THE GILSON SCREEN?

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

GILSON SCREEN CO.
BOX 186 · MERCER, PENNA.



For Churn or Cable Drilling
of
• BLAST HOLES
• PROSPECT HOLES
• SAMPLING
SAFE • EFFICIENT • ECONOMICAL

Spang Churn or Cable Tools are top performers in their fields for drilling test holes when prospecting or sampling . . . drilling blast holes for fragmentation of minerals or overburden . . . drilling and reaming escape, dewatering and ventilating holes . . . and drilling wells for other purposes. Fifty years' experience serving oil, water-well, mining and quarrying operations assures their value.

R606—Reamer-Type
Pilot Bit

LARGE BITS
for pilot hole drilling and stage enlargement reaming of dewatering, ventilation and escape holes.

D370F—Prefabricated
Star Bit

Ball Clay Output Decreased But Value Increased in 1952

In 1952 reports made to the Bureau of Mines, United States Department of the Interior, by ball clay producers showed an 11 percent decrease in tonnage—from 344,981 short tons to 305,683—but a 6 percent increase in value compared with 1951. Total value of the 1952 output was $3,955,958.

For the last decade Tennessee has been the largest producer—54 percent of the United States total. Kentucky was second, with 35 percent. Following the two principal producers were Maryland, Mississippi, and New Jersey in order of tonnage produced. Compared to 1951, ball clay production in Kentucky decreased 4 percent and in Tennessee 16 percent, in 1952.

The pottery industry consumed 73 percent of the ball clay produced in the United States in 1952, compared with 78 percent in 1951. Ball clay used in making whiteware decreased 18 percent, and the quantity consumed by high-grade and architectural terra cotta also decreased. The amount going into the enameling industry increased. In 1952, high-grade tile accounted for 12 percent (same as in 1951); refractories accounted for 7 percent (5 percent in 1951); and enamels, paper fillers, and miscellaneous uses accounted for 5 percent (4 percent in 1951) of the total national output.

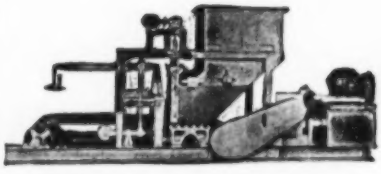
In 1952, the average value per short ton for ball clay, as reported by producers to the Bureau of Mines was $12.97, compared with $10.80 in 1951, $12.27 in 1950, and $12.31 in 1949. In 1952 the average price per short ton for Tennessee was $12.98 ($9.17 in 1951); for Kentucky, $12.80 ($12.68 in 1951); and Maryland, Mississippi, and New Jersey, $13.41 ($13.44 in 1951).

Bentonite Being Produced At Open-Pit California Mine

Pacific Colloid Company, Hollister, Calif., is producing bentonite from a deposit on the Ashurst ranch in the Panoche district and shipping the finished product to numerous markets. Material is trucked from the mine to Hollister, where it is ground and sacked for shipment. Bentonite is used in manufacture of "mud" for oil wells, filter material, drugs, paint, perfume, and many other products.

The deposit is said to be extensive and of high quality, and is mined by the open-pit method. J. Poggi is manager of operations. Bentonite has been mined for several years in the Panoche district and other areas of San Benito County by C. Hyde Lewis of New Idria and associates, and also by other operators.

Presenting
THE PREFERRED SCALES *for* 1954



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will be featured during the coming year by leading bulk material producers.

These fast, automatic, accurate machines have a long-established reputation for insuring large-scale, economical output of uniform products.

Poidometers are easy to operate, and durably built for continuous service anywhere.

Available with total tonnage recorders, and remote controls for indicating or changing feed rate.

WEIGHING
BLENDING
FEEDING
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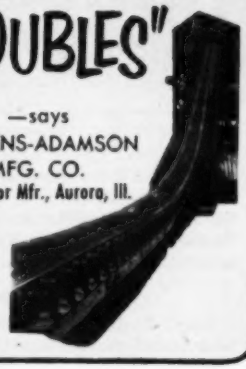
Write for CATALOG No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman St. • Pittsburgh 22, Pa.

"NO MORE LUBRICATION TROUBLES"

—says STEPHENS-ADAMSON MFG. CO.
Conveyor Mfr., Aurora, Ill.



"LUBRIPLATE Lubricants satisfy the 'one-shot' requirements of our conveyor idlers. LUBRIPLATE effectively lubricates each bearing in turn and flows through the hollow shaft to the next bearing. We do not know of a single case of bearing trouble through faulty lubrication where LUBRIPLATE has been used."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

Production Lower in 1952 For Mineral Earth Pigments

Sales of natural and synthetic iron-oxide pigments declined slightly in 1952, according to reports by processors to the Bureau of Mines. Sales totalling 123,236 tons, valued at $13,542,485, decreased about 2 percent in quantity and 9 percent in value, compared with 1951.

Natural iron-oxide pigments accounted for 55 percent of the total tonnage produced in 1952. Red oxides accounted for 40 percent of the natural iron-oxide pigments or 22 percent of the total mineral pigments. Natural brown oxides (metallic brown) represented 11 percent of the natural iron-oxide pigment sales; yellow oxides represented 6 percent.

Synthetic iron-oxide pigments sold by producers in 1952 totaled 55,190 short tons or 45 percent of the total mineral pigment sales.

Sales of natural and synthetic iron-oxide pigments were reported from eleven states. More than one-third of the tonnage sold was from six plants in Pennsylvania. Illinois, Ohio, and Wisconsin, as a group, ranked second in total sales.

Sierra Talc & Clay Company Operating Relocated Plant

Sierra Talc & Clay Co. is operating its plant at Olancha, Calif., to process talc and clay mined from deposits nine miles distant. The plant was moved from Los Angeles a few months ago to Olancha, which is located on a branch of the Southern Pacific railroad 200 miles north of Los Angeles.

Sierra Talc is among the nation's largest talc producers. It is manufacturing a new product at its Keeler plant for use in paints and other materials made by the protective coating industry. The company controls talc deposits in California and Nevada and operates a new $500,000 plant at Grand Island, Nebr., which processes talc from its Yellowstone mine near Norris, Mont. The Grand Island mill is the fourth to be operated by the company.

Henry Mulryan of Los Angeles, executive vice-president of the corporation, stated recently that the company's expansion program has been materially accelerated by the increasing industrial demand for California quality talc and by the discovery of the Yellowstone deposit.

Ellis B. Gardner and Robert A. Nilsen have been elected vice-presidents of of Hewitt Robins, Inc., Stamford, Conn. Mr. Gardner is controller of the company and a member of the Rubber Industry Advisory Committee to the Defense Materials Agency. Mr. Nilsen is general manager of the foam rubber division.

A survey entitled, "Investigation of Some North Dakota Clays and Shales", by O. E. Mantz, ceramics engineer, and available through Wilson M. Laird, state geologist for the North Dakota Geological Survey at Grand Forks, reveals about 240 million tons of bentonitic clays in western North Dakota, in addition to other high-grade clay deposits, sandstone, and clinker. The 36-page booklet locates large fields of bentonitic clays.

MINING OPERATORS USE McCarthy Drills

Heavy-Rugged-Powerful

AT Bessemer Limestone & Cement Co., Bessemer, Pa., one McCarthy unit (above) averages 90 ft. per hour, drilling through hard blue shale and sand rock 34 ft. deep. Blast holes are drilled on 18-ft. centers. Two men handle the whole job, including setup and moving. McCarthy drills operate with gasoline, diesel or electric power units . . . on all types of mounts. McCarthy "money-savers" can work for you. See your nearby distributor or write Salem Tool direct for further information.

SALEM
THE SALEM TOOL CO.
1901 S. ELLSWORTH AVE.
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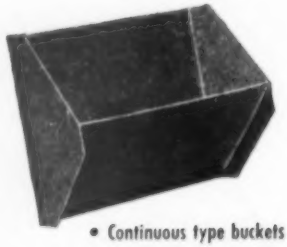
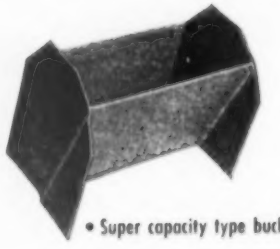
RUGGED AND DEPENDABLE AT low cost

• Salem type buckets



• Continuous type buckets



• Super capacity type buckets

Standard high quality steel elevator buckets are available in all styles, types, sizes and gauges for replacement as well as new installations. For real economy and immediate service, get acquainted with the Standard line today.

Write for new catalog showing the complete line of Standard buckets and prices.

The Standard Metal Mfg. Co. SINCE 1921

STANDARD METAL MFG. CO.
111 Center St., Malinta, Ohio

trade notes

Walter C. Thompson has been elected president of the Torrington Co., Torrington, Conn., to succeed Lester J. Ross, who died recently. Ray B. Nichols succeeds Mr. Thompson as executive vice-president.

N. Russell Clarke, president of the Westfield Mfg. Co., Westfield, Conn., was named a director for the unexpired term of Mr. Ross.

Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio, announces an eight-minute, 16mm color-sound film entitled "The Loggers' Giant". Filmed in the "Paul Bunyan" country, the Pacific Northwest, the movie is a narrative-type travelogue showing Lima machines in action.

Organizations or companies interested in obtaining the film should address their request on company or organization letterheads to the Sales Promotion Department, Baldwin-Lima-Hamilton Corp., Lima, Ohio.

The appointment of McNall Machinery and Supply Corporation, 600 D Avenue N.W., Cedar Rapids, Ia., as distributor for Lima shovels, cranes, draglines, and pullshovels, is announced by the Baldwin-Lima-Hamilton Corporation, Lima Ohio. McNall will handle the Lima account in central and eastern Iowa.

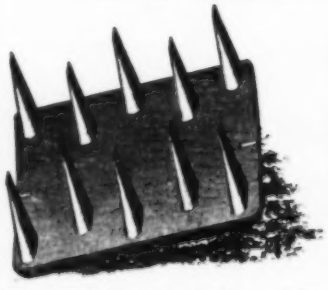
Frank F. Mulkey has been appointed manager of the St. Louis, Mo., office of The Falk Corp., Milwaukee, Wis., manufacturer of power transmission equipment.

A new sales district covering Texas, Louisiana, and Oklahoma has been established by the Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis, Mo.

The new district has headquarters in Houston, Texas, and will be managed by F. E. Suder, who has been with the Porter organization in various capacities since 1951.

For Longer Service Use the

TALCOTT BETTER BELT FASTENER



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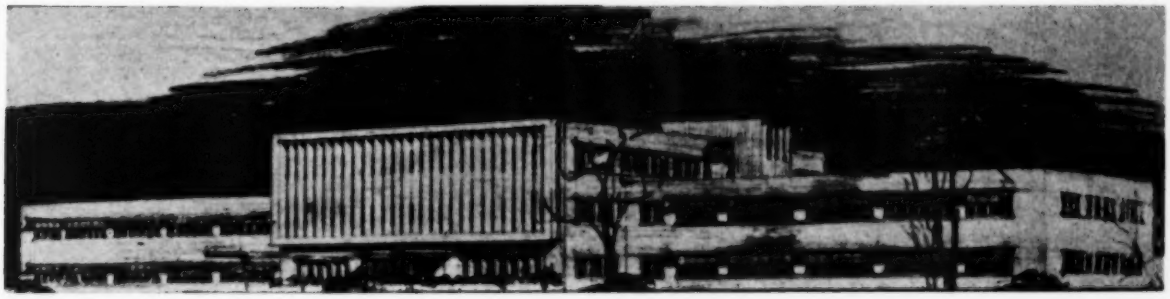
Come around to Booth 46
Nat'l Sand & Gravel and
Nat'l Crushed Stone Shows
Conrad Hilton Hotel, Chicago,
February 15 - 24

We'll Show You What We Can Do for You!

Proven by laboratory tests to have 60% to 300% more tensil strength at the splice than any other belt fastener on the market. Tell us the size and kind of belt you use, and we will send free samples for you to test in your plant under actual working conditions.

W. O. & M. W. TALCOTT, Inc.
91 Sabin St., Providence, R. I.



George W. Thompson, who has been manager of the Atlas Powder Company's explosives sales district in Seattle, Wash., since 1948, has been recalled to Wilmington, Del., to become assistant to W. E. Collins, director of explosives sales. Emmett G. Easterly, special representative, will succeed Mr. Thompson as Seattle district manager. James M. Ellis, Portland Oreg., salesman, has been named Seattle special representative, replacing Mr. Easterly.

Robert S. C. Ernst has been appointed director of the sales and merchandising departments for Bergen Wire Rope Co., Lodi, N. J.

John R. Hamill has been appointed manager of the Kansas City, Mo., district office of Worthington Corp., Harrison, N. J. He will succeed Paul J. Foley, who has been appointed general sales manager for products of Worthington's Plainfield, N. J., plant.

An explosives blast replaced the traditional spade as Atlas Powder Company's president, Ralph K. Gottshall, broke ground for the firm's new administrative headquarters, to be located on a 45-acre tract at the intersection of Concord Pike and New Murphy Road, Wilmington, Del. The structure, which will cost about $2,700,000, is scheduled for completion early in 1955. It will house Atlas Powder's present 400 general office employees and allow for a 50 percent future expansion in its administrative staff.

Clark Equipment Co., Buchanan, Mich., has appointed the following eastern dealers to handle its newly-acquired Ross straddle carriers and fork truck lines: Materials Handling, Inc., Pittsburgh, Pa.; Fallsway Spring and Equipment Co., Baltimore, Md.; C. E. Reutter Corp., New Haven, Conn.; Rushmore, Weber and Case, Inc., Latham, N. Y.; and Brodie Industrial Trucks, Inc., of Malden, Mass., and Buffalo, N. Y.

The Okonite Co., Passaic, N. J., has named Albert F. Metz to the newly-created position of chairman of the board and chief executive officer. He has been president of the company since 1949.

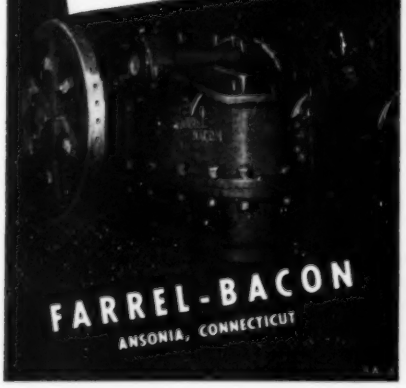
R. Stuart Keifer, former vice-president in charge of sales, becomes president, with Edward D. Youmans as vice-president in charge of research and product development.

Charles M. Kirkland, formerly factory sales manager at the Passaic plant has been elevated to vice-president in charge of sales, and David W. Nurse, former resident manager of the Wilkes-Barre plant, has been promoted to vice-president in charge of manufacturing for the three Okonite factories.

Hammond Bag & Paper Company, Wellsburg, W. Va., has opened a new plant at Charlotte, N. C., to improve the service to paper bag users in the southeastern states. R. C. Barnes is manager, and Carl Metcalf is superintendent.

FARREL-BACON
JAW CRUSHERS
SIZES 60"x48" to 10"x7"

Optional design features include: (1) Meehanite frame, sectionalized when necessary; (2) removable water-cooled bearings; (3) improved design of swing-jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive. *Write for further details or engineering assistance.*



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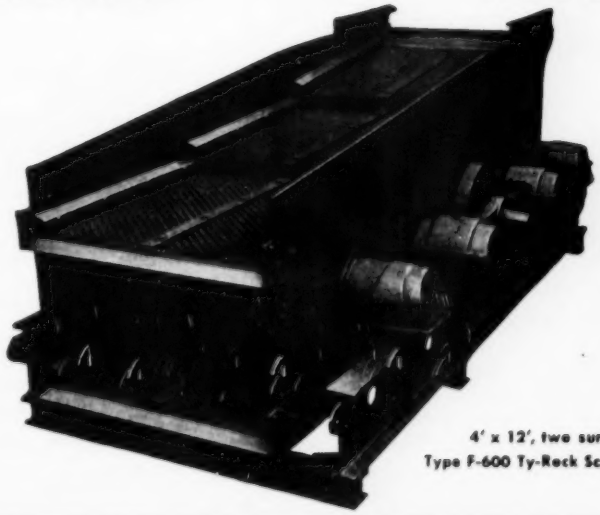
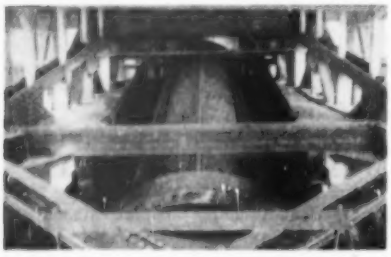
YOU CAN DEPEND ON
TY-ROCK SCREENS
BALANCED RUGGED



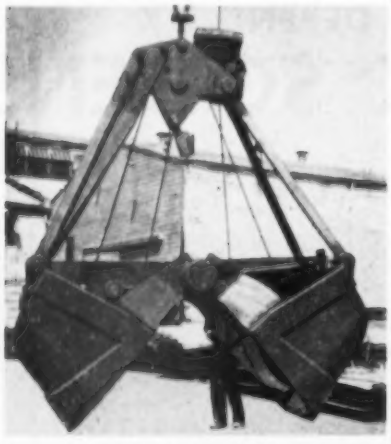
4' x 12', two surface
Type F-600 Ty-Rock Screen

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

YUBA Bucket Ladder Dredges for dredging placer properties including rare earths, etc.; handling sand and gravel, dam construction, channel changes, etc., Bucket sizes: 2½ to 18 cu. ft. or larger. Digging depths below water as required.



YUBA Abrasion Resisting Steel Screens—Flat or revolving for separating, scrubbing, sizing. Holes taper drilled to prevent clogging. All thicknesses from ¼" up; other dimensions as needed. U·S·S· AR plate carried in stock.



Stockton "Yubabilt" Clamshell Buckets, for channel, harbor and reclamation dredging. Two types: California and Power Arm (shown here). Three weight classes: heavy, standard, special light weight. ½ to 6 cu. yds.

YUBA DREDGES — PROVED DEPENDABILITY AROUND THE WORLD

57

YUBA MANUFACTURING CO.

Room 718 • 351 California St. • San Francisco 4, Calif.

Caterpillar Tractor Company, president, Louis B. Neumiller (left), and executive vice-president, H. J. Eberhard, unveil a large medallion at Peoria, Ill., representing the theme for a program to be conducted in 1954, commemorating the 50th anniversary of the world's first practical track-type tractor. This anniversary dates back to the successful testing of the first practical crawler on November 24, 1904, in Stockton, Calif., by the Holt Manufacturing Co., one of Caterpillar's parent companies. It was the Holt Company which originated the trademark "Caterpillar" at about the same time it made its first crawler.

Hugh M. Little has been named a vice-president of Le Roi Company, Milwaukee, Wis., and Norman J. Kimber has been promoted to works manager. Mr. Little joined the company in 1951 as works manager. In his new position he will be in charge of all co-ordinating activities between Le Roi and Westinghouse Air Brake Co., the parent firm.

John C. Keplinger, board member and former executive vice-president has been elected president of Hercules Motors Corporation, Canton, Ohio. Charles Balough, who was one of the organizers of Hercules, founded in 1915, was named chairman of the board of directors. He succeeds Gordon Mather, now retired.

Other appointments are as follows: Lawrence G. Downey, vice-president; George W. LaSalle, vice-president; F. H. Geisler, director of sales; Dr. E. A. V. Horiak, chief engineer.

Two changes in the sales operations department of the industrial rubber products plant of Hewitt-Robins were announced by C. W. Mackett, manager of the department.

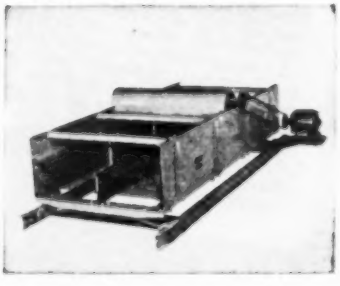
Kenneth L. Way becomes the assistant manager of sales operations, reporting to Mr. Mackett. Harry Knechtel becomes manager of hose sales and development, succeeding Mr. Way.

Carl F. Sprague, formerly manager of the packaging engineering department of Sherwin Williams Co., has joined the sales department of Chase Bag Co., Chicago, Ill. He will work in co-operation with the company's research laboratory in Chagrin Falls, Ohio, on improving packaging materials and methods.

James W. Jacoby, former member of the research department, has been named technical service representative on the staff of the Philadelphia branch.

SUGGESTION FOR 1954

SIMPLY GET THE FACTS ON NEW UNIVERSAL SCREENS BEFORE YOU BUY!



Installing a Universal assures:

1. — **Dependable screening results**
2. — **Lowest cost per ton**
3. — **Less labor cost**
4. — **A clean, bright product**

You can spend far more for more complicated screening machinery, but you can't get a better screening job! Write today for literature and prices.

UNIVERSAL VIBRATING SCREEN CO.

RACINE — WISCONSIN

George F. Wiese, associated with the design, engineering, construction and operation of cement plants since 1921, has been appointed mechanical engineer, Crusher and Process Machinery Division, Nordberg Manufacturing Company, Milwaukee, Wis. In this capacity, Mr. Wiese will be consultant to all company divisions on specific problems relating to cement plant design and operation.

The board of directors of the Sterling Engine Company, Buffalo, N. Y., has elected W. A. MacDonald as executive vice-president of the company. Mr. MacDonald joined Sterling in 1951 as sales manager and was promoted to vice-president in charge of sales later that year. He previously served as vice-president with Hupp Motors, Willys-Overland Co., and the Kaiser-Frazer Corp.

Russell A. Moore has been named field applications engineer, specializing in side-loading fork truck applications, for the Baker-Raulang Co., Cleveland, Ohio. He was formerly group engineer for Bell Aircraft Corporation, responsible for the design, fabrication, and testing of ground handling equipment used in the guided missile program.

Ray H. Scheurer has been appointed sales representative for the Midvale Company, Philadelphia, Pa., in the Cleveland territory, assisting Frank N. Satter. Both men are on the staff of the Midvale Pittsburgh District office.

Walter L. Vaughan has been appointed sales engineer in the Michigan-Indiana-southern Wisconsin territory for Kensington Steel Company, subsidiary of Poor & Company, Chicago, Ill.

Willis G. Scholl, vice-president in charge of the tractor division of Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has been elected to the firm's board of directors.

W. S. Dickie has been appointed director of the process equipment division of Vulcan Iron Works, Wilkes-Barre, Pa. He has been with the company since 1917.

W. S. Dickie

B. Franklin Witmer

B. Franklin Witmer has been appointed manager of cement equipment sales. He was formerly chief engineer of Valley Forge Cement Company and the Allentown Portland Cement Company.

Why they buy NEFF & FRY Storage Bins

In the photograph you see how the diagonal-ended staves of a Neff & Fry Storage Bin are laid up. They are grooved and beaded to lock together. Each course is encircled with as many galvanized steel rods as needed to withstand the thrust of the load.

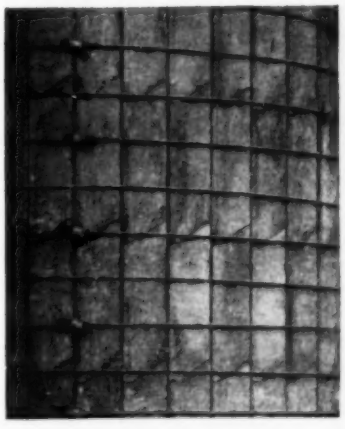
Our bins (often termed silos or tanks) are used by scores of America's leading companies for handling more than 80 kinds of flowable bulk materials; notably, cement, coal, clay, grain, gravel, ore, sand, wood chips.

The reasons:

Formed under tremendous hydraulic pressure, the staves are rocklike in strength and density. They do not spall, rust, or burn.

Since the walls are only 2½" thick, the bins have great capacity in relation to outside diameter; no wasted ground area.

Despite the thin walls, the structures have sufficient load-bearing ability to carry heavy superstructures without additional supports.



Our wide experience enables us to make valuable suggestions regarding materials handling systems and equipment.

If you want to invest a few minutes in mighty profitable reading, ask for our folder, "Bins with the Strength of Pillars."

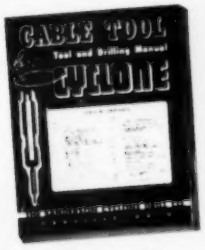
THE NEFF & FRY CO.
278 Elm St., Camden, Ohio

NEFF & FRY ➧ SUPER-CONCRETE STAVE STORAGE BINS

CYCLONE TOOLS for Cable Drills

NEW

INFORMATION COMPLETE



The most complete and compact cable tool manual and catalog ever published. Complete tool string specifications condensed into single, easy-to-use table. All drilling, fishing, hollow rod, etc. tools illustrated with use instructions. Section on drilling, bit dressing, etc. procedure. Completely cross-indexed. Write for FREE copy.

NEW SUPERALLOY ALL STEEL BITS

The Right Ruggedness For Rock

Order Your Trial Pair Today!

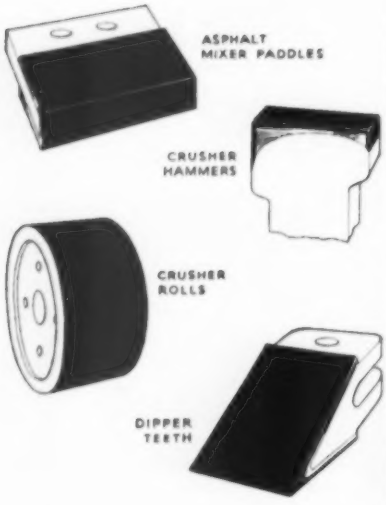
Cyclone Superloy Bits are forged from an entirely new alloy steel and subjected to a special heat treatment to give more footage per dressing, more holes per shift. Made to fit all makes of tools with perfect fitting joint guaranteed.

- FOR BIG BLAST HOLES
- FOR SAMPLING
- FOR PROSPECTING

CYCLONE

THE SANDERSON CYCLONE DRILL CO.
ORRVILLE • OHIO

BUILD UP WORN PARTS WITH REXARC S-3; HARD-FACE WITH 55



Build up with Rexarc S-3 and hard-face with "55" is a hard and fast rule with experienced welders who know their "hard rod."

Why this popularity? The superior qualities of "S-3" are well known. Welders acclaim Rexarc 55 for its extreme ease of application in any position, AC or DC. They like the smooth laydown . . . the tough, hard deposit that registers 54-60 Rockwell "C" in one pass!

Yes, where there's extreme impact and severe abrasion, specify Rexarc S-3 and 55 for best results. If you haven't tried this successful combination, call your Distributor, today.

REXARC
RESURFACING AND MANGANESE ELECTRODES

THE SIGHT FEED GENERATOR COMPANY
61 EAST THIRD STREET
WEST ALEXANDRIA, OHIO, U. S. A.

Caterpillar Tractor Co., Peoria, Ill., announces the following promotions in the domestic sales department!

H. J. Hunkele, formerly assistant sales manager of the central sales division, has been transferred to the engine division, where he has been named assistant manager of industrial sales. He is replaced by E. A. Tiarks, who has been assistant sales manager in the western sales division.

C. B. Leber has been promoted from a district representative in the plains sales division to assistant sales manager, replacing H. G. Eberling, who is being transferred to the western sales division.

J. H. Gill has been named manager of the industrial sales section of the newly formed engine division. He replaces H. W. Smith, who will be a consulting engineer.

Neil Pohl, industrial sales manager at the Kansas City branch has been promoted to the newly-created position of motor grader sales manager, industrial sales department of the Tractor Division, Allis-Chalmers Manufacturing Co., Milwaukee, Wis. Mr. Pohl joined the company in 1948.

Neil Pohl

Robert F. McClellan

Robert F. McClellan, former Mid-west district manager of Nopco Chemical Co., Harrison, N. J., has been appointed vice-president and general manager of Yocum Faust, Ltd., London, Ont., Nopco subsidiary.

Eugene Engineering Co., Eugene, Oreg., manufacturers of the EECO rock drill, have announced the appointments of the following distributors throughout the 11 western states and Alaska.

Westmont Tractor & Equipment Co., Missoula and Kalispell, Mont.; Colorado Builders' Supply Co., Denver and Casper, Wyo.; Western Machinery Co., Phoenix, Ariz.; Wheeler-Kershaw Co., Salt Lake City, Utah; Intermountain Equipment Co., Boise, Idaho and Spokane, Wash.; Seitz Machinery Co., Inc., Billings and Great Falls, Mont.; R. L. Harrison Co., Albuquerque, N. M.; Pacific Hoist & Derrick Co., Seattle and Puyallup, Wash.; Northern Commercial Co., Alaska and the Yukon; Cascade Equipment Co., Eugene, Oreg.; and Smith Booth Usher Co., Los Angeles, Calif.

Gar Wood Industries, Inc., Wayne, Mich., has announced the organization of the Mattoon Division to handle the production of Gar Wood bulldozers and road machinery sold through Allis-Chalmers industrial tractor dealers. Hunter Dietz, formerly plant manager at Mattoon, Ill., has been appointed division manager.

ANOTHER Over 10 Year MAN

L. F. Smithson, Plant Superintendent of the New London Materials and Construction Company of New London, Minn., has been a constant reader of PIT AND QUARRY for over ten years.

Mr. Smithson's loyal readership is very gratifying and we really appreciate it.

More important, though, is the continuing proof that PIT AND QUARRY gives Mr. Smithson what he wants . . . new innovations, new machinery and new methods of operation in the industry.

Continual readership like Mr. Smithson's is another point of proof why PIT AND QUARRY is the most widely accepted publication available to the top men in the industry.

The Forecast Section of this issue will give you a graphic picture of what you can expect in 1954. Every key man in the pit and quarry industry will want to follow this story carefully throughout the year.

Thanks again, Mr. Smithson. The editors of PIT AND QUARRY will continually strive to give you the information you want.

Pit and Quarry

Ralph K. Gottshall, president of Atlas Powder Company, Wilmington, Del., has been elected a life trustee of Lafayette College according to an announcement by Dr. Ralph C. Hutchison, Lafayette president. Mr. Gottshall is a Lafayette alumnus, and was chairman of the Lafayette Alumni Council from 1949 to 1952.

J. V. Richards, former assistant manager, has been appointed manager of the Brooklyn, N. Y., plant of Bemis Bro. Bag Co., St. Louis, Mo., filling the vacancy created by the death of Arthur C. Ewer. He joined Bemis in 1923.

C. D. Alexander, until recently manager of the Bemis plant at Indianapolis, Ind., has been given new duties at the general company level. He is succeeded by R. C. Van Horn, who has been acting manager. Mr. Van Horn started with Bemis as a clerk at Indianapolis in 1906.

Robert E. Halloran has been named to the newly-created position of manager of mechanical sales of the Tubular Products Division of The Babcock & Wilcox Co., Beaver Falls, Pa.

James S. Anderson, former assistant general sales manager, has been appointed general sales manager of the division.

E. W. Spannhake, mechanical engineer and consultant, formerly associated with Barnes and Reinecke, Inc., Chicago, Ill., has been named director of engineering and research for the LeTourneau-Westinghouse Co., Peoria, Ill.

John Fennell Berger, 1109 Parkside Avenue, Trenton, N. J., has been appointed sales representative to mines, pits, and quarries in eastern Pennsylvania and southern New Jersey for the Bergen Wire Rope Company, Lodi, N. J. Mr. Berger was formerly with John A. Roebling's Sons Co., Trenton, N. J. He also represents the Newark Wire Cloth Co., Newark, N. J., in the sale of wire screens and testing sieves.

John Fennell Berger

E. E. Esgate

E. E. Esgate has been elected a vice-president of the Thew Shovel Company, Lorain, Ohio. Mr. Esgate joined the company in 1949 as asistant to the general manager.

Robert J. Lenz has been appointed manager of the customer service department, Euclid Road Machinery Co., Cleveland, Ohio. He replaces George M. Perry, who has been named director and works manager of Euclid Great Britain, Ltd.

RUGGED! EFFICIENT!

The Ideal Way to MOVE Bulk Material is the VIBRO-VEYOR

Shown is one of 3 units for handling foundry floor clean-up sand.

No matter what your plant material handling problem is — foundry sand, ore, dry aggregate, coal, chips, or chemicals — this rugged, economical JSCO VIBRO-VEYOR is the ideal solution! It's safe for workers; no spillage; self-cleaning — and has LOW power consumption. Write for details

JOHNSTONE DIVISION OF
KAYSING IRON WORKS
2500 Montgomery St. St. Louis 6, Mo.

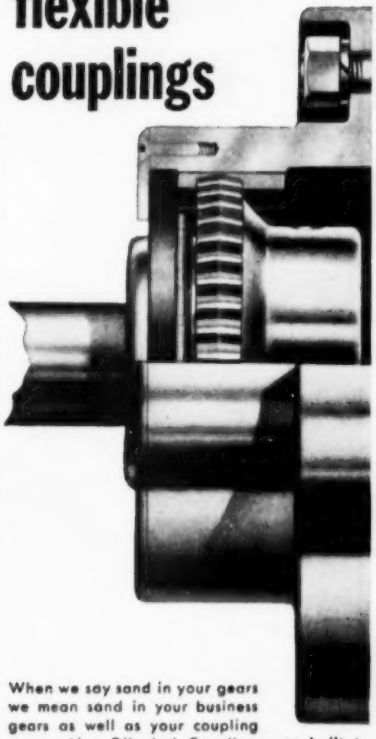
JSCO

NO SAND in the Gears

when you use

AJAX DIHEDRAL

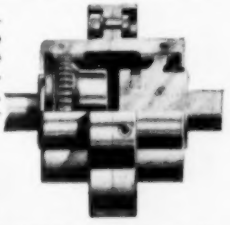
flexible couplings



When we say sand in your gears we mean sand in your business gears as well as your coupling gears. Ajax Dihedral Couplings are built to stand up under every tough condition including gravel pit, sand sucker, washer, sizer, cement mill and transit-mix trucks.

Ajax Dihedral Couplings handle unavoidable misalignment on permanent and portable equipment. Seals keep lubrication in and abrasive grit out.

If you have misalignment trouble you can't afford to be without Ajax Dihedral Couplings. Tell us your problems.



AJAX
FLEXIBLE COUPLING COMPANY INC.
WESTFIELD, N.Y.

X . . . chosen by
MODERN QUARRY OPERATORS

"Cape Ann"
FORGED
STEEL DROP BALL

RUGGED DESIGN
GREATER IMPACT
ECONOMICAL

The "Cape Ann" Drop Ball is a sure winner because it provides top serviceability at minimum cost.

Strong alloy steel pin. Forged connecting link, protected by deep recess, adaptable for swivel or shackle. Minimum cable replacements. Furnished complete as shown.

2000 to 8000 lbs.

Write for full details

Cape Ann Anchor & Forge Co.
Gloucester • Massachusetts

F. Doyle Bowers has been appointed southern district manager for the Republic Rubber Division, Lee Rubber and Tire Corp., Youngstown, Ohio. Stanley L. Martin has been named field engineer with headquarters in Houston, Tex.

Albert W. Ginther, formerly general sales manager, Wood Manufacturing Co., North Hollywood, Calif., has been named sales manager of Smith Booth Usher Co., Los Angeles, Calif., a division of Western Machinery Co.

John L. MacDonald, former Boston district industrial tool service engineer, has been named manager of the newly-opened Newark, N. J., factory branch office of Thor Power Tool Co., Aurora, Ill.

Foxboro Co., Foxboro, Mass., has opened a branch office at 1117 La Paloma St., Amarillo, Tex. Assigned to the office as industrial engineer is D. T. McElligott, formerly of the Dallas office.

Harry A. Smith has recently been appointed field engineer for the Calcium Chloride Institute. He will provide engineering service for users of calcium chloride in the North Central states area.

Hudson Pulp and Paper Corporation, New York, N. Y., has leased the ninth and tenth floors of a new building at 477 Madison Avenue, for the use of its New York sales and executive offices. Occupancy is scheduled for early spring.

S. V. V. Hoffman, regional manager of the Los Angeles, Calif., office, has been appointed district manager — West Coast Sales District of Raybestos-Manhattan, Inc., Passaic, N. J. He will supervise the sales staffs at Los Angeles and San Francisco, Calif., and Seattle, Wash.

Chesley H. Johnson has been appointed district sales manager in the New England and New York territory for Sherman Products, Inc., Royal Oak, Mich. He will make his headquarters in Worcester, Mass.

Jack N. Yetter has been appointed manager of sales promotion of the Twin Disc Clutch Co., Racine, Wis. Mel H. Woodward has been named successor to Mr. Yetter as manager of the Tulsa, Okla., district.

Robert Leibsle has been appointed sales manager of Pettibone Wood Mfg. Co., recently acquired West Coast subsidiary of Pettibone Mulliken Corp., Chicago, Ill. Factory and sales offices are at 6900 Tujunga Ave., North Hollywood, Calif.

J. P. Waite, Inc., 3304 West Pierce Street, Milwaukee, Wis., now offers sales and service on Bucyrus-Erie 3/8- to 4-cu. yd. excavators and cranes in Wisconsin and upper Michigan.

William H. Newton, formerly associated with the Jeffrey Mfg. Co., Columbus, Ohio, has been named general sales manager of the WEMCO division of Western Machinery Co., San Francisco, Calif.

PYRASTEEL

SEGMENTAL KILN ENDS FOR CEMENT PLANTS
. . proven satisfactory in THOUSANDS of Installations

Avoid burnouts and shutdowns, and insure years of continuous service, by equipping your kilns, both feed and discharge ends, with PYRASTEEL Segmental Kiln Ends.

PYRASTEEL is equally effective and economical in many other high-heat applications, including clinker coolers, conveyor screws, feed pipes, and drag chains.

Over three-quarters of the annual cement output is produced in plants using either or both of our alloys, PYRASTEEL and EVANSTEEL.

PYRASTEEL KILN END,
Discharge end

Unit Segments are easy to install or replace

Write for PYRASTEEL Bulletin

CHICAGO STEEL FOUNDRY CO.
Kedzie Avenue and 37th Street • Chicago 32, Illinois
Makers of Alloy Steel for Over 45 Years

Albert W. Strahorn, manager of Atlas Powder's Giant explosives works at Richmond, Calif., has been appointed assistant chief engineer of Atlas Powder Company, Wilmington, Del. Henry T. Clark, former director of the Volunteer Ordnance Works at Chattanooga, Tenn., operated for the government by Atlas, succeeds Mr. Strahorn as manager of the Giant works.

Harold O. Washburn, president since 1945, has been elected chairman of the board of American Hoist and Derrick Co., St. Paul, Minn. Mr. Washburn joined the company in 1911 and was elected to the board of directors in 1928.

John E. Carroll, former vice-president of sales, was elected president, and James F. Bishop was named vice-president and treasurer.

J. J. Davison, formerly Portland, Oreg., district manager, has been named manager of truck tire sales for the Fisk-Gillette tires division of United States Rubber Co., New York, N. Y.

A. G. Richtmyer is the new Portland district manager, and R. P. Buis has been named district manager at Kansas City, Mo.

J. W. Pressler has been appointed district manager at Springfield, Mass., and Merrill E. Kirsch has been named branch manager at Cincinnati, Ohio.

Arthur D. Angell, manager of West Coast operations, has been elected vice-president of the Western Division of the Dewey and Almy Chemical Co., Cambridge, Mass.

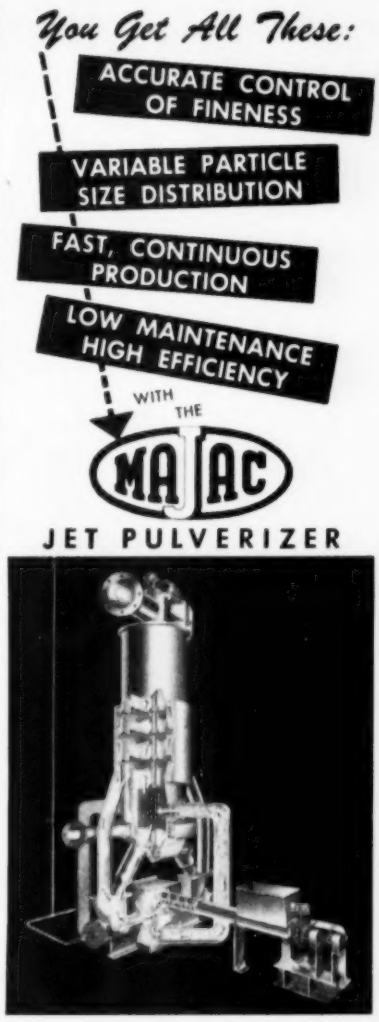
Arthur Schroeder has been named southeastern application engineer for the Warner Electric Brake & Clutch Co., Beloit, Wis. Mr. Schroeder will maintain offices at 4146 Caldwell Rd., Brookhaven, Ga.

John P. Tansey, formerly service contract manager, has been named National service manager of the Communications and Electronics Division of Motorola, Chicago, Ill. He succeeds Fred Schnell, who has been designated staff assistant to Daniel E. Noble, vice-president.

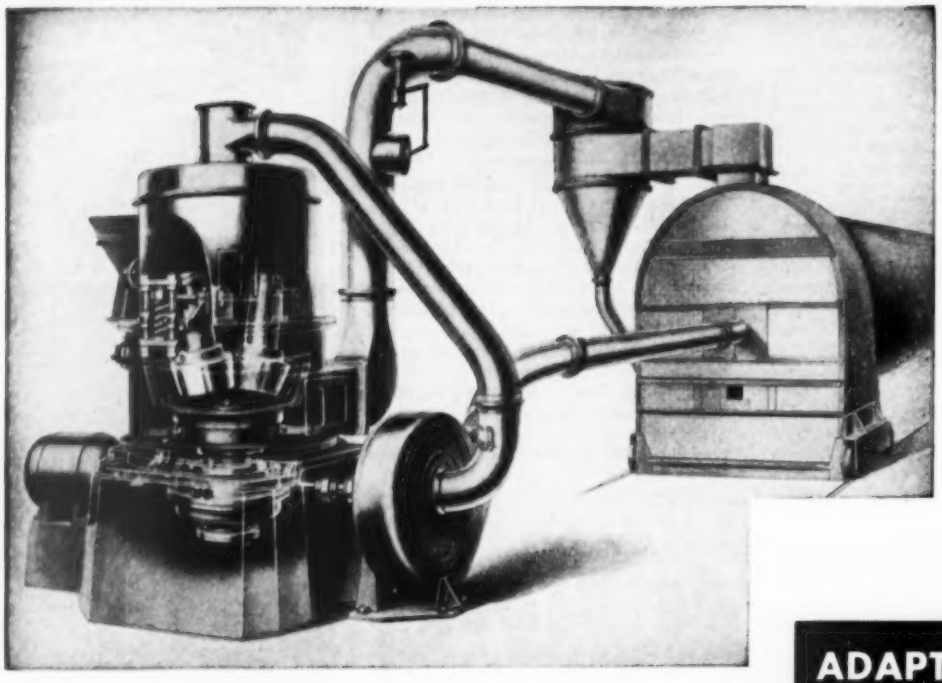
R. B. Crean, assistant general manager, has been named vice-president of the Ingersoll Production Division of Borg-Warner Corp., Chicago, Ill. Howard A. Schmeal is secretary and treasurer of the division, and Robert F. Schutz, assistant treasurer, has been given the additional title of assistant secretary.

Robert Shattuck, former vice-president, has been elected president of Marbon Corp., Gary, Ind., a subsidiary of Borg-Warner. He succeeds George P. F. Smith, who has retired to devote full time to his duties as president of the Norge Division.

AROUND THE CLOCK
EVERYDAY—WITHOUT SHUTDOWNS
CLEVELAND
WIRE SCREENS
Everyday—around the clock... less down time... increased tonnage... greater production can be yours when you install longer life "Cleveland" Wire Screens. Tough—yet ductile, produced by craftsmen, "Cleveland" wire screen sections maintain rigid accuracy of openings, have fewer wire breaks, prove greater resistance to abrasion, corrosion and fatigue. Mail us your requirements—our specialists will make recommendations at once.
Write for Bulletin No. 5 and 6.
THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 79 STREET · CLEVELAND 5, OHIO


You Get All These:
ACCURATE CONTROL OF FINENESS
VARIABLE PARTICLE SIZE DISTRIBUTION
FAST, CONTINUOUS PRODUCTION
LOW MAINTENANCE HIGH EFFICIENCY
WITH THE
MAJAC
JET PULVERIZER
When necessary the Majac Jet will pulverize to a fineness impossible by any other means. In addition, you can control that fineness accurately to any desired degree . . . or provide for various percentages of different micron sizes.
Operating by steam, gas or compressed air, the Jet keeps maintenance costs at a minimum. At the same time it provides fast, efficient pulverization of a wide range of materials. If pulverizing is on your program, find out about the Majac Jet.
Some materials which have been pulverized successfully by the Majac Jet:
Alumina
Ceramic Frit
Cement
Clays
Graphite
Gypsum
Iron Ore
Limestone
Mica
Perlite
Silica Sand
Talc
Pilot plant test grinding, and custom grinding on contract basis, also available.
Write for New Bulletin Containing Full Engineering Data
MAJAC INCORPORATED
23rd ST. and P.R.R. SHARPSBURG, PA.
(Pittsburgh District)

How Raymond BOWL MILL FIRING



THE Raymond Bowl Mill is entering its 20th year of service to the non-metallics industry for direct firing rotary kilns.

Today, more than 12 million tons annually (rated capacity) of coal are pulverized on Bowl Mills in the lime, cement and dolomite fields alone.

Raymond "Bowl Mill Firing" can become an important factor in your "planned economy" for the critical year ahead by reducing your kiln operating costs and improving production quality.

Its ready response to load changes, ease of control, overall efficiency and high availability, are advantages that will pay off in extra savings and larger plant output.

Write us for further details of this fully coordinated, automatically controlled direct-firing system.

ADAPTABLE

for handling coal of any grade, grindability or moisture content

DEPENDABLE

for continuous non-stop operations for months at a time without shutdowns

ECONOMICAL

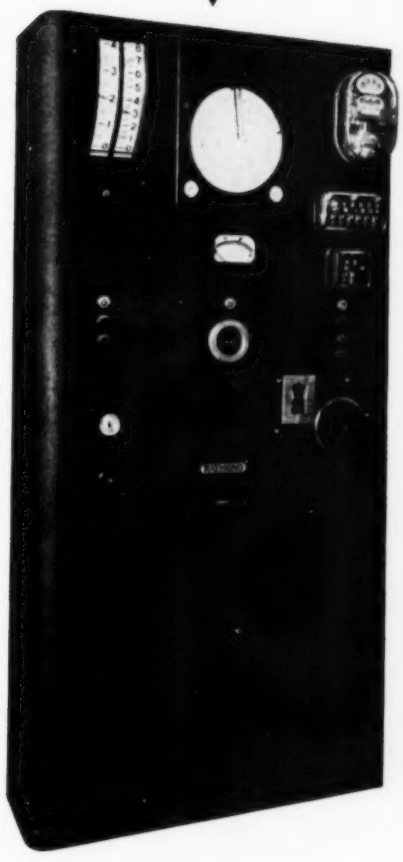
Low power consumption per ton of coal pulverized and low operating costs in production of cement or lime

Bulletins ON REQUEST

COMBUSTION

RAYMOND DIVISION

gives BETTER OPERATING CONTROL AND GREATER KILN ECONOMY



CATALOG No. 62

Ask for your copy of the Bowl Mill Catalog No. 62

BOWL MILL VISUAL CONTROL PANEL

This Raymond control system enables the operator to supervise several Bowl Mills with a minimum of effort.

The panel board gives a complete operating picture of the mill at all times. Close regulation of the mill, and its instant response to any changes, insure uniformity in grinding and firing . . . the key to economy in kiln operation.

ENGINEERING, Inc.

1321 NORTH BRANCH STREET • CHICAGO 22, ILLINOIS

Sales Offices in Principal Cities

Want still finer feed

to Increase the Capacity of Tube Mills?

Year after Year
DEPENDABILITY with
CAST STEEL
IMPACT HAM
at . . .
DEWEY PORTLAND
. . . for over 25 y
MARQUETTE CE
. . . for over 23
IDAHO PORTL
. . . for over 2

more than
"Just Machinery"
Since
1885

Here's a GI
for Capacity
400 TONS PER HOUR
1/2 inch and minus
WRITE FOR INFORMATION

. . . Inquire about our Conventional Impact Breakers and Movable Breaker Plate Crushers for wet products

Complete Engineering Service on Crushing of Materials and Problems Related to Crushers

GRUENDLER

CRUSHER *and* PULVERIZER CO., Dept. PQ 7 ST. LOUIS 6, MO.

turning rock into rubble!

Chicago Pneumatic Rock Drills are especially suited for open quarry work. Whether you're excavating for building stone, slate, limestone or just road fill, you'll find CP drills will do the job safer and faster. And the wagon drills assure complete ease of operation even under the most adverse terrain conditions. For more complete information write, *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

CP Sinker Drills – The complete line ranges from the lightweight CP-22 (28 lb.) to the extra heavy duty CP-50N (102 lb.). They're designed for continuous hard service – are ideal for short blast hole drilling. Fully cushioned for low maintenance, there's a CP Sinker Drill for every type of wet or dry drilling.

G-300 Wagon Drill – Affords fast, accurate drilling from any angle. Tubular chassis and drill carriage assure maximum stability and strength with no added weight. Takes complete advantage of the high drilling speed and rotation of the 4-inch CP-70-NDC Drifter. And the G-150 light Wagon Drill for drilling holes to 20 feet provides a lighter, even more maneuverable unit when combined with heavy sinkers and light weight drifters.

Chicago Pneumatic *8 East 44th Street, New York 17, N. Y.*

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

For Immediate Deposit!

Buell Engineers have made an *exact* science of the recovery of valuable industrial dusts. With the help of Buell equipment, many of America's Leading Corporations make substantial cash savings every day.

Buell's specialized knowledge and experience make possible a scientifically accurate forecast of efficiency and economy before you spend a single penny. You see, Buell specialists study dust content and operating conditions and submit a written report on effectiveness in advance.

We are always glad to supply the names of present users of Buell equipment right in your own field. Their year 'round experience is our best selling point!

Send for our informative Brochure – The Collection and Recovery of Industrial Dusts. It explains *all three* Buell systems of industrial dust collection. Write Dept. 18A today for your complimentary copy. Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

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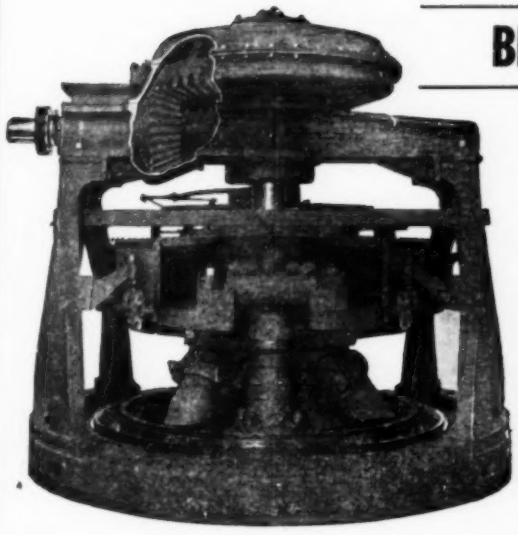
MECHANICAL ELECTRICAL

20 Years of Engineered Efficiency in
DUST COLLECTION SYSTEMS

BRADLEY HERCULES MILLS

BRADLEY HERCULES SCREEN MILL



Producers of cement, agricultural limestone and similar materials find that their grinding needs are most efficiently met by Bradley Hercules Mills.

In the cement industry wherever these mills are used as preliminary pulverizers, outputs are increased substantially while power requirements are reduced.

These mills are especially efficient in economically producing agricultural limestone in a single operation.

Bradley Hercules Mills are expertly engineered with all wearing parts constructed of special alloys for long service operation under all working conditions.

Bradley Hercules Mills assure peak capacities on a high economy basis.

BRADLEY PNEUMATIC HERCULES MILL

This mill is well suited for the economical production of finely ground limestone, phosphate rock and other similar materials.

The Bradley Pneumatic Hercules Mill is designed for floor level installation, thereby reducing foundation costs and increasing accessibility for oiling and maintenance.

An Electrically controlled Vibratory Feeder insures positive feed and allows continuous operation of the mill at top efficiency.

A most modern air system and cyclone separator assures maximum output with the highest uniformity of fineness.

Specialists

in Semi-Fine and Fine Grinding Since 1891

Write for Bulletins

BRADLEY PULVERIZER CO., ALLENTOWN, PA.

Cold Test

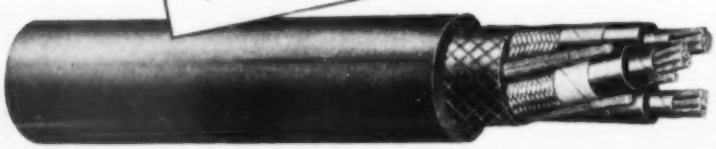
Exposure to sub-Arctic temperature is one of the ordeals these cables must undergo to prove their qualifications. The cables are conditioned for one week at −40° F. and, while at this temperature, bent around a mandrel having a diameter three times that of the cable for cables .55" and less in diameter. Larger cables are bent to greater diameters. This is one of the most severe ways of testing U. S. Royals.

U. S. ROYAL CABLES ARE COLD RESISTANT

7 reasons why U. S. Royal Cables mean safety:

Seven grueling laboratory tests, each tougher than actual conditions, guarantee U. S. Royal's resistance to moisture, abrasion, cutting, heat, cold, impact, flexing. United States Rubber engineers spare no effort in making sure U. S. Royal is a completely safe electrical cable. Write for your free copy of valuable booklet describing complete line of cables to address below.

SAFETY TESTED



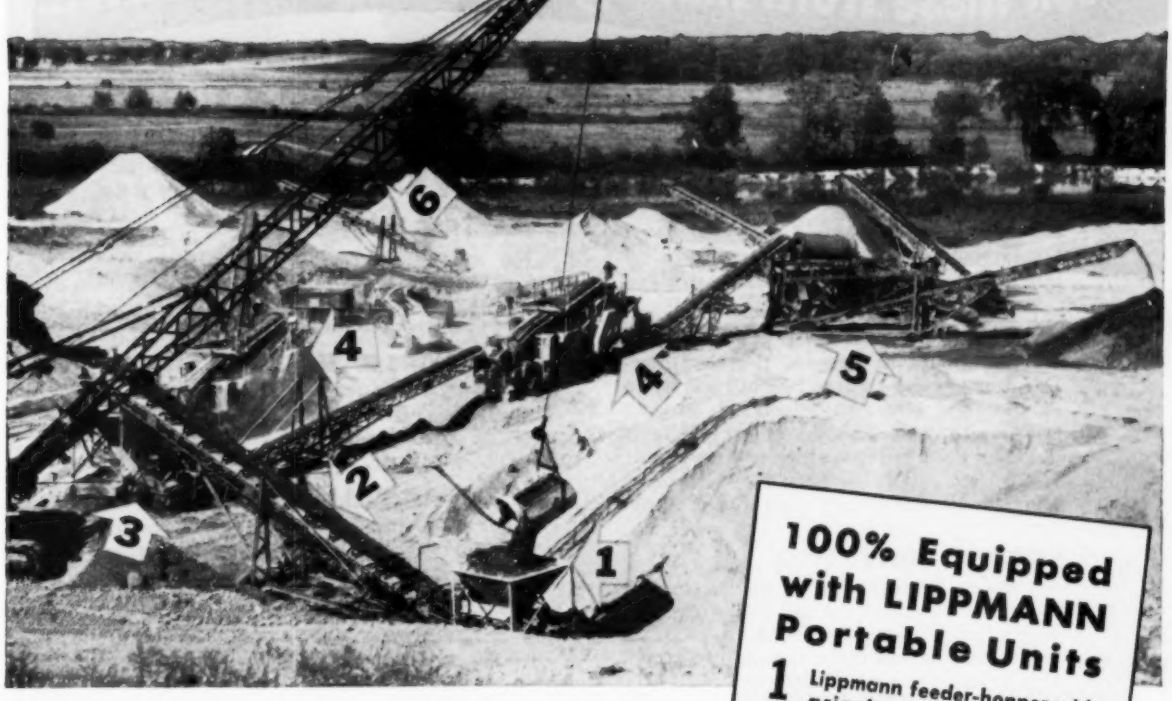
U. S. Royal Shielded Portable Cable Type SH-D

Products of U.S.RUBBER SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

ELECTRICAL WIRE AND CABLE DEPARTMENT • ROCKEFELLER CENTER, NEW YORK 20, NEW YORK

Another ALL-LIPPMANN Pit



180 tons per hr. washing capacity

Here is a complete, mobile crushing, screening and washing plant that is a profit maker in any pit. It's Lippmann-engineered from bank to stockpiles to produce both washed and unwashed grades. It's portable so that it can be moved quickly over the highway to a new location. Designed with true balance and sturdy construction, these Lippmann portable units are so smooth running that when reaching destination they actually require little or no blocking before going into action, another profit making extra that is usual with Lippmann equipment.

Whatever your needs for sand, gravel, stone and aglime production, you can look to Lippmann for the kind of performance that spells profitable, steady operation . . . the kind of design and construction that has made Lippmann famous for quality everywhere . . . the kind of quality that in a span of 33 years has made Lippmann crushing, screening and conveying equipment important to the operations of many leading material producers and contractors the world over. Lippmann Engineering Works, 4607 W. Mitchell St., Milwaukee 14, Wisconsin.

100% Equipped with LIPPMANN Portable Units

1 Lippmann feeder-hopper with grizzly and reciprocating plate feeder.

2 Lippmann radial stacker from hopper to primary crusher.

3 Lippmann Primary Crushing Plant with 24" x 36" "Grizzly King" jaw crusher and "Screen-All" vibrating screen.

4 Two Lippmann Portable Secondary Crushing units with Roll Crushers and "Screen-All" vibrating screens. One delivers to the unwashed stockpiles, the other to the washer.

5 Lippmann Portable Washing plant has large scrubber, triple deck "Screen-All" vibrating screen and efficient sand drag.

6 Seven Lippmann portable belt conveyors stockpile the different grades of sand and stone, and load trucks.

LEW LIPPMANN

CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

Check these Profit making Features of the NEW...

DEMPSTER DIGGSTER® GRD-101

✓ **NEEDS NO WHEEL TRACTION**
Loading of the bucket is accomplished by the exclusive Hydraulic Crowd and Hoist power of the Dempster-Diggster.

✓ **MAXIMUM DUMPING HEIGHT**
This is important because the Dempster-Diggster has the digging height capacity to handle jobs oftentimes expected only of power shovels. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

✓ **TORQUE CONVERTER**
Excavating shovels and front end loaders have to take the abuse and punishment of intermittent jolts. The Dempster-Diggster is constructed and built, not only to accept this at its full value, but to smooth out the sudden jerking and jolting by means of a torque converter. The torque converter is a mechanical feature, but its effect on greater efficiency of the machine and lower operating costs is so great it is one of the important reasons why you want a Dempster-Diggster!

✓ **MINIMUM TURNING RADIUS**
The outside turning radius of the Dempster-Diggster is only 18'3".

✓ **ELECTRIC BUCKET TRIP**
You get a machine with an automatic electric bucket trip for dumping drop bottom digging bucket . . . giving you instant dumping and instant closing of bucket.

✓ **TRUCK-SPEED MOBILITY**
Dempster-Diggster moves from job to job without the use of hauling equipment or can be towed behind a dump truck with the use of a tow bar.

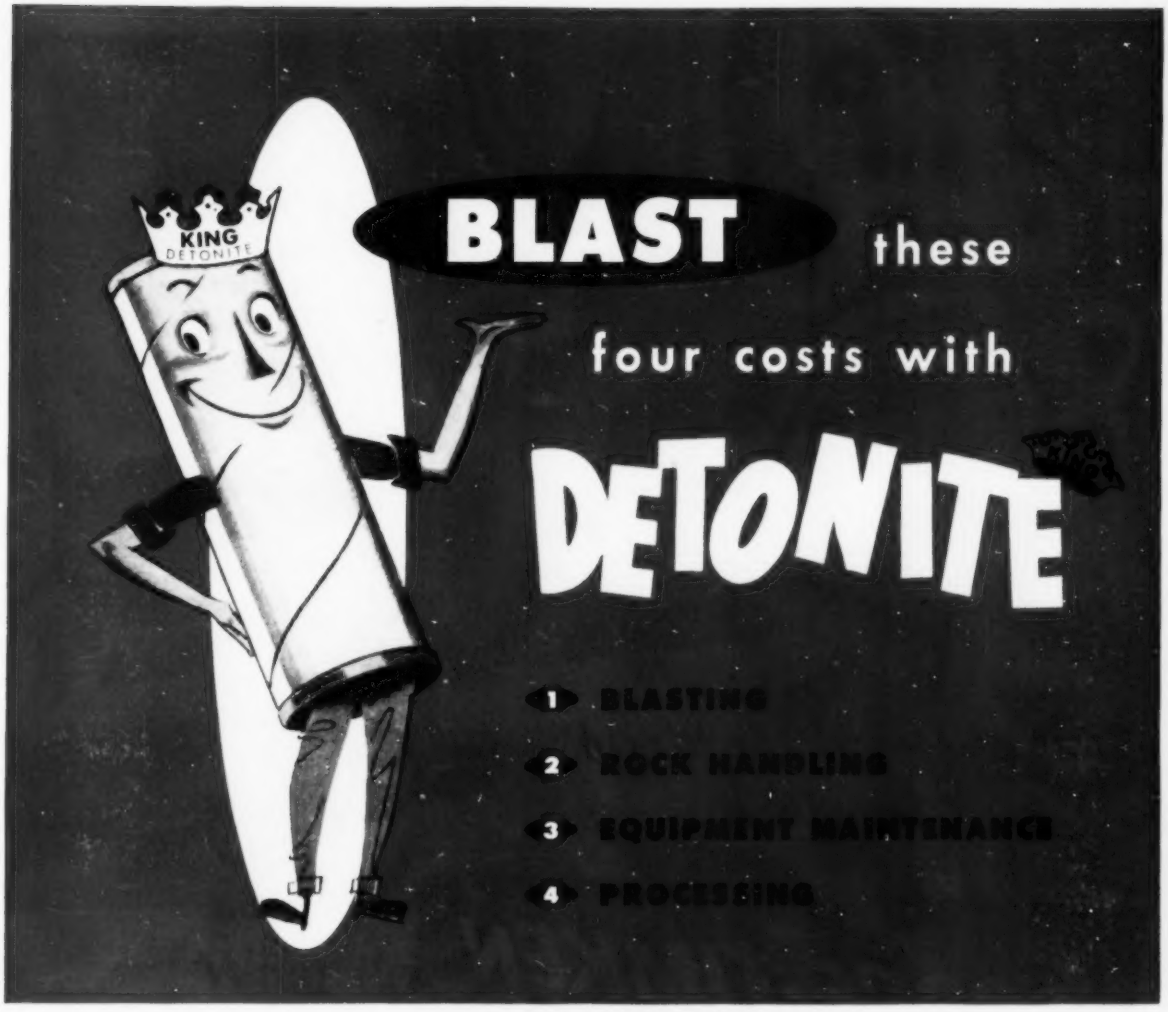
✓ **HYDRAULICALLY STEERED**
Your Dempster-Diggster has positive hydraulic steering booster which is operated by separate, individually driven pumps. Your operator stays fresh, will not tire with this finger-tip steering.

Here's a shovel that won't skim the bank or bottom—but gets a full bucket with every stroke. Here's a shovel that gives you the extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information, including Folder No. 3116.

You get a truck payload with a Dempster-Diggster. Note truck is loaded to maximum heaped capacity, yet Dempster-Diggster has ample clearance.

Photo above shows bucket against front of frame in the position which enables Dempster-Diggster to dig 15 inches below grade.

DEMPSTER BROTHERS, 214 N. KNOX, KNOXVILLE 17, TENNESSEE



BLASTING IS THE KEY . . . blasting with King Detonite, and we'll prove it to you right in your own quarry (see coupon below). With Detonite blasting, you get important reductions in all of these 4 major operating costs:

1. BLASTING COST . . . King Detonite is a slow-detonating powder. Its slow, heaving, spreading action lifts and fully displaces the burden. High cost of secondary drilling and shooting is greatly reduced.

2. ROCK-HANDLING COST . . . King Detonite breaks up rock into sizes that permit shovels to dig efficiently at all times, thus reducing handling costs to a minimum.

3. EQUIPMENT MAINTENANCE COST . . . King Detonite's more uniform fragmentation means less wear and tear on expensive equipment . . . less cost for maintenance and replacement.

4. PROCESSING COST . . . King Detonite's more uniform fragmentation allows your crushers to operate at top capacity, thus lowering cost of processing the stone.

KING DETONITE

PATENTED SURFACE-SENSITIZED EXPLOSIVE

No nitroglycerine . . . non-headache

Since 1878—Our 76th year

THE KING POWDER CO., INC.

CINCINNATI 1, OHIO

4 WAYS TO CUT COSTS

King Powder Co., Inc.
Cincinnati 1, Ohio

Show me how Detonite will cut my costs 4 ways. Without obligation, have the King Representative get in touch with me to arrange for a Detonite demonstration right at our quarry.

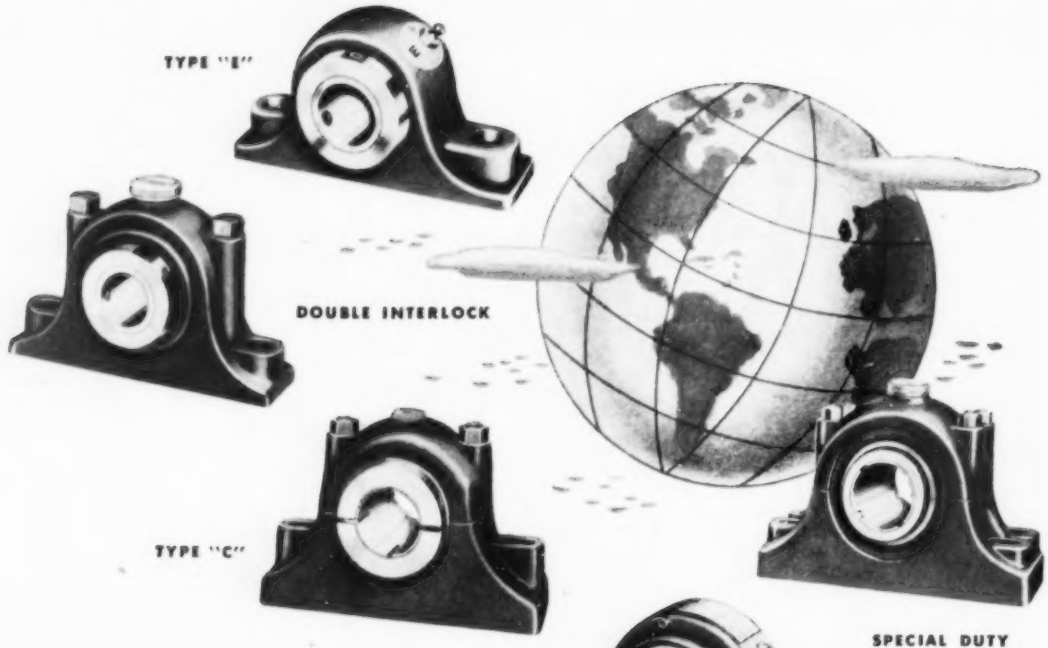
Name _____

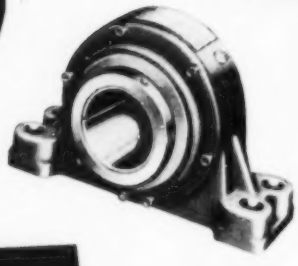
Title _____

Company _____

Address _____

or phone us collect





Known 'round the World for Dependability —

DODGE-TIMKEN

★ In millions of installations Dodge-Timken bearings have proved their ability to cut costs and increase production. Their dependability is unquestioned under every condition of service. Available in five different types, including the new Dodge-Timken All-Steel Pillow Block for grueling, heavy duty jobs. All are sealed both on and off the shaft.

Dodge-Timken bearings are fully assembled and lubricated — ready to lock on the shaft. They are normally available from distributors' stocks . . . in a wide range of sizes. Call your distributor or write us for Dodge-Timken bulletins.

DODGE MANUFACTURING CORPORATION
4000 UNION STREET, MISHAWAKA, INDIANA

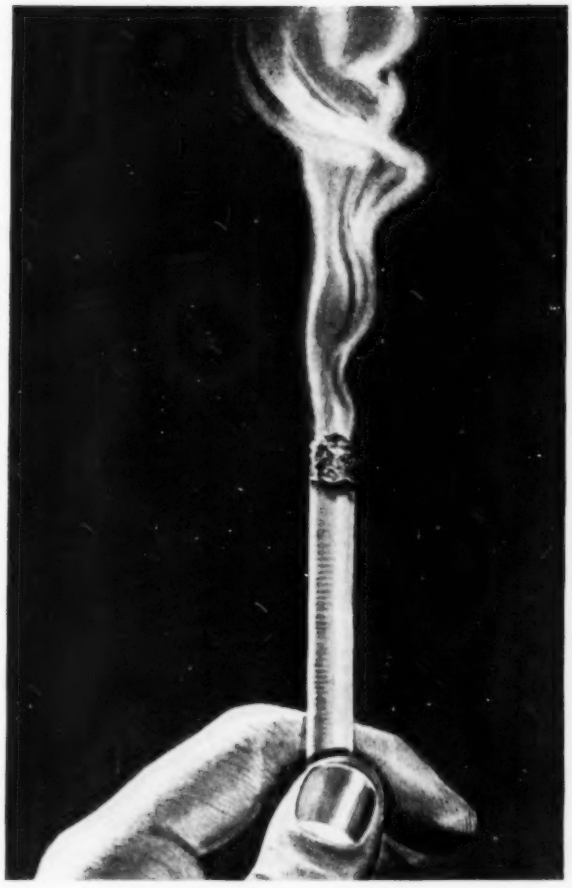
DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory-trained by Dodge, he can give you valuable assistance on new, cost-saving methods. Look for his name under "Power Transmission Machinery" in your classified telephone book.

TORQUE-ARM SPEED REDUCERS

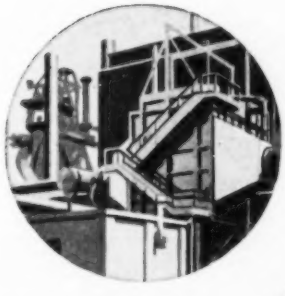
ROLLING GRIP AND DIAMOND D CLUTCHES

TAPER-LOCK SHEAVES; SEALED LIFE V-BELTS



What do these two 'smokes' have in common?

THE SMOKE PARTICLES that cigarette filters attempt to trap are often as small as one 2 millionth of an inch.



Gases generated in industrial processes contain particles as minute as these—in addition to many a good deal larger. And, particularly in cases where a range of microscopic particles is involved, tests show Koppers-Elex Electrostatic Precipitators to be the most effective and efficient means of achieving these three benefits:

FIRST—recovery of valuable materials entrained in process gases.

SECOND—cleaning of gases for subsequent re-use.

THIRD—control of discharge gases well within the limits set by nuisance abatement laws—vital in maintaining good public relations in industrial communities.

Koppers precipitators can work at almost 100% efficiency . . . and operate *continuously*, too. Koppers multiple-chamber design permits the gas-cleaning operation to continue uninterrupted in one chamber while another is undergoing inspection or maintenance.

Koppers-Elex precipitators are designed, engineered, fabricated, erected, and guaranteed under one contract by the Koppers Company. For analysis and recommendations relating to your operation, submit details without obligation to: KOPPERS COMPANY, INC., *Precipitator Department*, 231 Scott Street, Baltimore 3, Maryland.

GUARANTEE: All Koppers-Elex precipitators are guaranteed to meet your specifications for efficiency or residual content.

KOPPERS®

ELECTROSTATIC PRECIPITATORS

METAL PRODUCTS DIVISION • KOPPERS COMPANY, INC., BALTIMORE 3, MD.

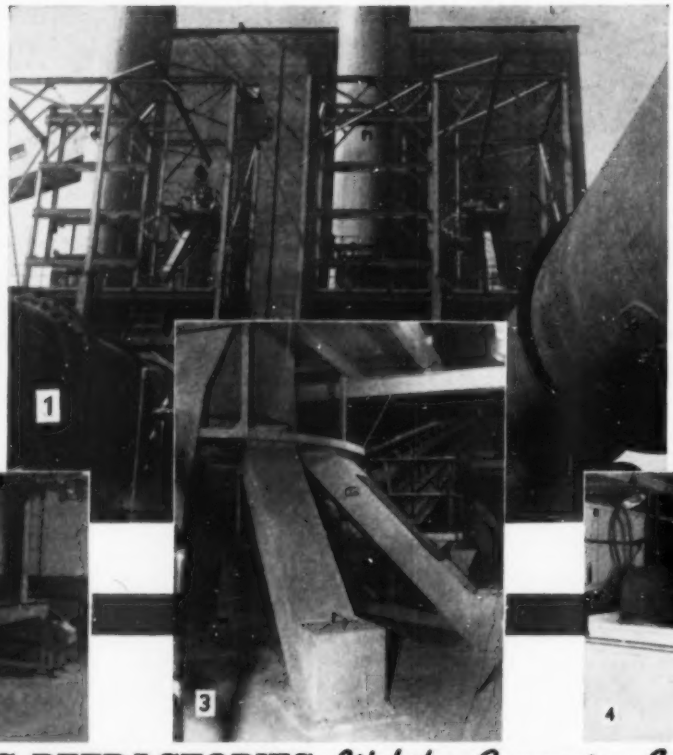
This Koppers Division also supplies industry with Fast's Couplings, American Hammered Industrial Piston and Sealing Rings, Aeromaster Fans, Gas Apparatus.

Engineered Products Sold with *Service*

Webster

1 This twin installation of Webster Bucket Elevators provides 'round the clock service at the very heart of the plant's operations.

2 These dust recovery screw conveyors quickly handle material from the kilns, resist the wear and stresses of such an operation.



3 The handling of rough stone to various storage bins imposes abrasive action and operation problems that Webster equipment quickly solves.

4 Quick moving of coal is a continuous operation at Basic. The Webster Shuttle Belt Conveyor gives speedy, low cost service here.

At BASIC REFRACTORIES *Webster Conveying Equipment Provides Faster, Economical Service*

Keeping the production flow moving day and night is mighty important at Basic Refractories. Webster Conveying Equipment has withstood the extra stress and strain of stepped-up schedules and almost continuous operation at this important manufacturing center.

Placed at strategic points throughout the plant, Webster equipment has more than justified the confidence placed in it by Basic engineers, naturally interested in keeping downtime at a minimum and upkeep at a low level.

Results obtained at Basic Refractories prompt us to suggest that similar results can be enjoyed by you, regardless of the quarrying operation in which you are engaged. Feel free to write us . . . there is no obligation in having a Webster engineer study your needs.

Webster Manufacturing, Inc.
TIFFIN, OHIO
Sales Offices in All Principal Cities

Send for Free Information

- We will gladly send literature covering all types of Webster Equipment. Write today!

Webster

Since 1876 Serving All Industry

Call Us...

about your tramp iron troubles... we're specialists in Magnetic Separators

Homer permanent non-electric magnetic separators, are the products of specialized manufacturing—they are twenty-four hour a day watchdogs for industry, serving practically every phase in eliminating lost production, down-time and extra maintenance cost due to TRAMP IRON.

Too, they are serving many plants in manufacturing and processing industries, where it is necessary to concentrate ferrous from non-ferrous materials in any form.

If you need magnetic separation of any type, we invite you to call on us for assistance. There is no obligation to you for consultant service. The Homer Manufacturing Company, Inc., Dept.1-52, Lima, Ohio.

Remember...
with a
HOMER
you are
Certain!

HOMER

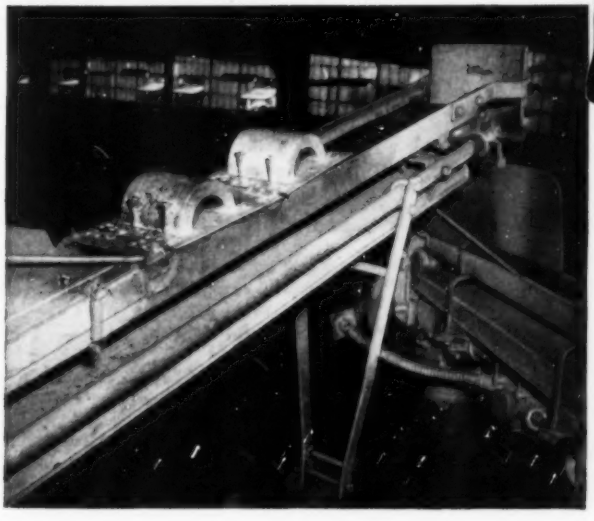


Photo at left shows two Type F HOMER permanent magnetic separators installed on a Beardsley & Piper sand slinger. These magnets were mounted on the small conveyor which feeds the slinger head. This installation was successful not only in removing damaging tramp iron, but also removed small "BB" shot which happened to be mixed with the sand. The Homer separators were also credited with the elimination of approximately $100 cost per day in repair parts and replacement labor only, and did not take into consideration production loss caused by equipment "down-time."

5 IMPORTANT CONVENTIONS

Are Just Ahead

THE winter convention season is just ahead for many of the important nonmetallic mineral industries and related industries. Important national meetings are scheduled for producers of sand and gravel, crushed stone, agricultural limestone, ready mixed concrete and concrete masonry units. In conjunction with the sand and gravel, crushed stone and agricultural limestone meetings, the biennial exhibits of machinery and supplies will be held. At the other meetings there will be no exhibits, but manufacturers' representatives will attend in large numbers. All producers, whether or not they are members of these associations, and others interested, are invited to attend, except in the case of N.C.M.A., where attendance is limited to members and invited guests.

Complete programs of all conventions are available and the information on hand indicates that they will be at least up to their usual high standards. Recognized authorities, most of them members of or directly connected with these industries, will discuss the latest and most important developments affecting these industries. Subjects covered will include production methods, merchandising, research, governmental developments, present conditions and future prospects, etc. Open forums will invite wide participation in the formal discussion of vital problems.

INDUSTRIES COVERED ARE:

SAND AND GRAVEL

CRUSHED STONE

AGRICULTURAL LIMESTONE

READY MIXED CONCRETE

CONCRETE MASONRY

HAVE YOU MADE YOUR HOTEL RESERVATIONS? IF NOT, DO SO NOW!

Here are the Dates and Places—

Thirty-Eighth Annual Convention
National Sand & Gravel Assn.
February 15-19, 1954
Conrad Hilton Hotel, Chicago, Ill.

Thirty-Seventh Annual Convention
National Crushed Stone Assn.
February 22-24, 1954
Conrad Hilton Hotel, Chicago, Ill.

Ninth Annual Convention
National Agricultural Limestone Institute, Inc.
February 19-20, 1954
Blackstone Hotel, Chicago, Ill.

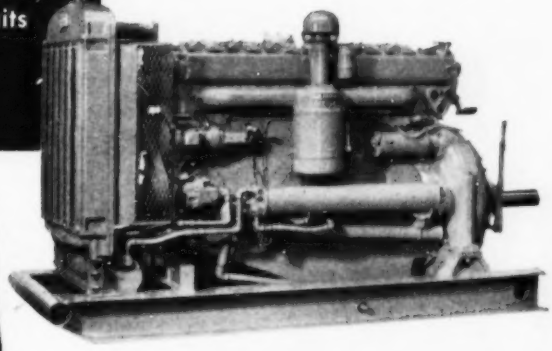
Twenty-Fourth Annual Convention
National Ready Mixed Concrete Assn.
February 15-19, 1954
Conrad Hilton Hotel, Chicago, Ill.

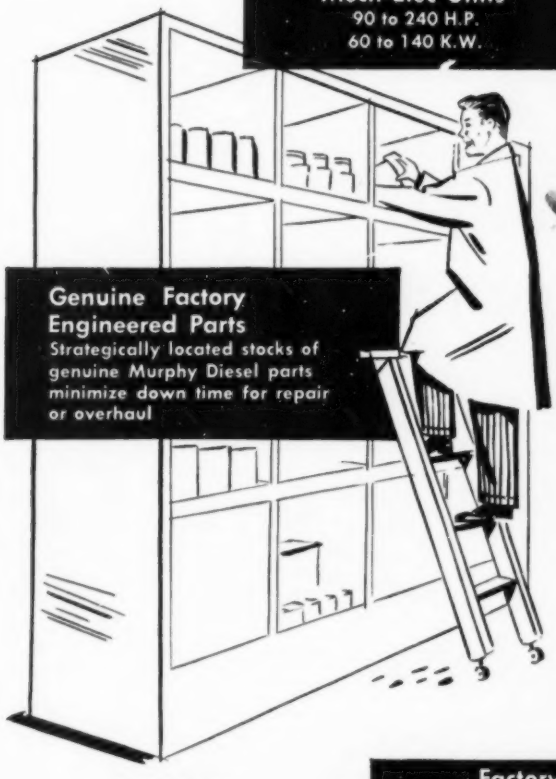
Thirty-Fourth Annual Convention
National Concrete Masonry Assn.
February 8-11, 1954
Hotel Shoreham, Washington, D. C.

Wherever you are

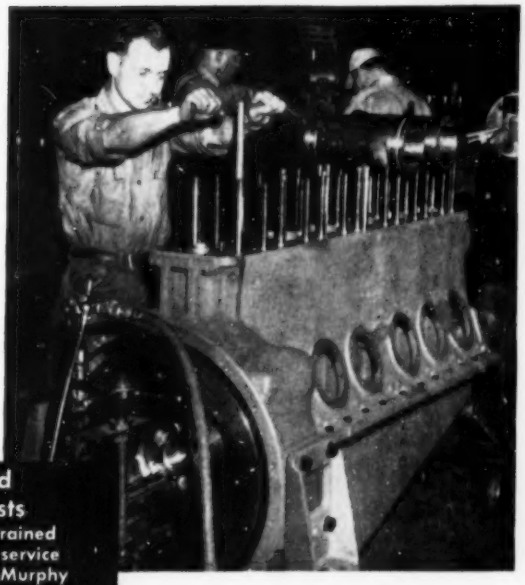
you will find MURPHY DIESEL
sales, parts and service facilities
convenient, prompt and dependable

Engines and Power Units
Generator Sets
Mech-Elec Units
90 to 240 H.P.
60 to 140 K.W.





Genuine Factory Engineered Parts
Strategically located stocks of genuine Murphy Diesel parts minimize down time for repair or overhaul



Factory Trained Service Specialists
Dealer servicemen are trained in the newest and best service techniques right in the Murphy factory

MURPHY DIESEL COMPANY
5307 W. Burnham St.
Milwaukee 14, Wisconsin

253

MURPHY DIESEL

Heavy duty power for rock crushing

Murphy Diesel engines and power units are available in sizes from 90 to 226 H.P. Engine speeds are 1200 and 1400 rpm.

"Packaged" generating units are available with capacities ranging from 60 to 140 K.W. A.C. or D.C. voltages.

This Simplicity screen has already produced 6,150,000 tons limestone!

Simplicity Model D Double Deck Screen at McDonough Bros. Stone Company helps produce specially prepared limestone for metallurgical applications

This 4′ x 12′ Simplicity Double Deck Screen at McDonough Bros. Stone Company in San Antonio, Texas, has already produced more than six million tons of metallurgical limestone. And it's still going strong. A 24″ belt conveyor, running at 600 feet per minute, delivers 300 to 400 tons of limestone an hour to a crusher. Then the Simplicity Gyrating Screen separates the plus 4½″ material on the top deck and the plus 2⅝″ material on the bottom deck. Simplicity Screens, like those in operation at McDonough Bros., can help insure fast, accurate sizing and processing in your plant. And the simplified power and operating mechanism of Simplicity equipment helps keep maintenance costs down. For complete information, consult a Simplicity sales engineer or write us today.

137

• SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.

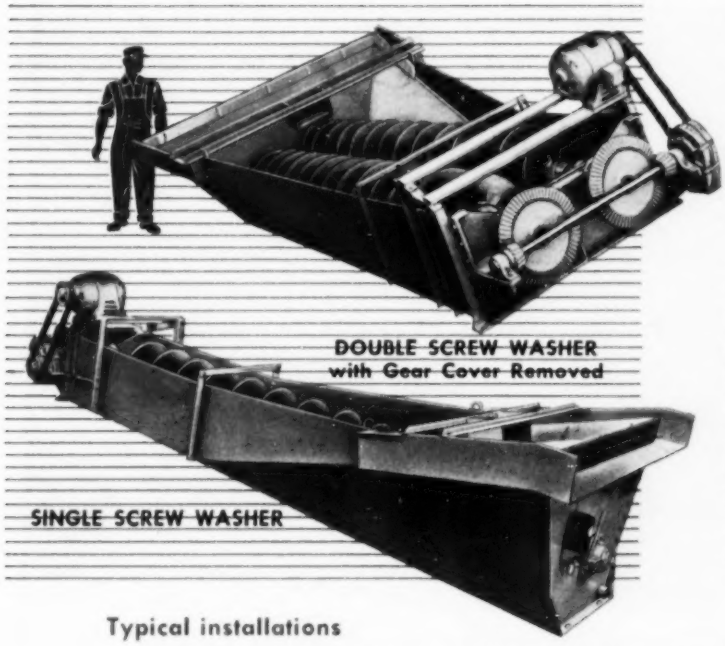
We'll be looking for you!
Booth No. 58
at the Sand and Gravel Show

Simplicity
TRADE MARK REGISTERED
ENGINEERING COMPANY • DURAND, MICHIGAN

For the Removal of Waste and Water from Sand and Similar Materials

McLanahan SCREW WASHERS

are designed for long service life and lowest maintenance cost



McLanahan Screw Washers—thoroughly proven in service—provide the ultimate in equipment for the efficient, low cost removal of foreign material and water from sand or coarse materials.

These washers contain many outstanding features, including: antifriction bearings which are easily removed without disassembly—extra large settling area—enclosed reduction drive—flights are cast chilled alloy iron for extreme hardness and resistance to wear.

Washers are available in Single and Double Screw models illustrated—in 20′ and 25′ lengths dependent on moisture content and capacity desired. Investigate today!

Typical installations

McLANAHAN & STONE CORPORATION
Pit, Mine and Quarry Equipment Headquarters Since 1835
Hollidaysburg, Pennsylvania

Write for Bulletin SW-953
This bulletin contains data and drawings on Single and Double Screw Washers. Write for your copy today!

Compare...Then you'll specify AUSTIN-WESTERN for your crushing and screening plant!

HERE ARE A FEW TYPICAL REASONS WHY IT WILL PAY YOU TO **COMPARE** BEFORE YOU BUY!

COMPARE ...	A-W	Make "X"	Make "Y"	Make "Z"
Steel plate crusher frame for high strength without weight of cast steel frame.	Yes	No	Yes	No
Machined steel toggle plate for absolute protection instead of cast iron	Yes	No	No	No
Inclined positive-throw type vibrating screen	Yes	Yes	No	Yes
Dustproof and watertight brakes on outside of wheels	Yes	No	Yes	No
All bearings of anti-friction type	Yes	Yes	Yes	Yes
Single source for wide range of complete stationary or portable plants, crushers, matching screens, elevators, conveyors and bins	Yes	Yes	No	No
TOTAL	100%	50%	50%	33⅓%

"61" compact, lightweight and readily portable: Designed for low cost, fast output where extreme accuracy to size is not required.

"101" Newly designed plant with 10" x 36" roller bearing jaw crusher, 30" x 20" roller bearing roll crusher, 30" conveyors and 4' x 12' inclined positive throw type screen.

"201" New Austin-Western plant to produce especially large amounts of ¾" and smaller product. 10" x 24" jaw crusher; 24" x 16" roll crusher; 3' x 10' vibrating screen, and 24" conveyors.

Before you buy any crushing and screening plant, we urge you to *compare* carefully specific design and construction features. If you do so, we are confident that you will prove conclusively that Austin-Western plants are designed and constructed to out-perform and outlast all other makes.

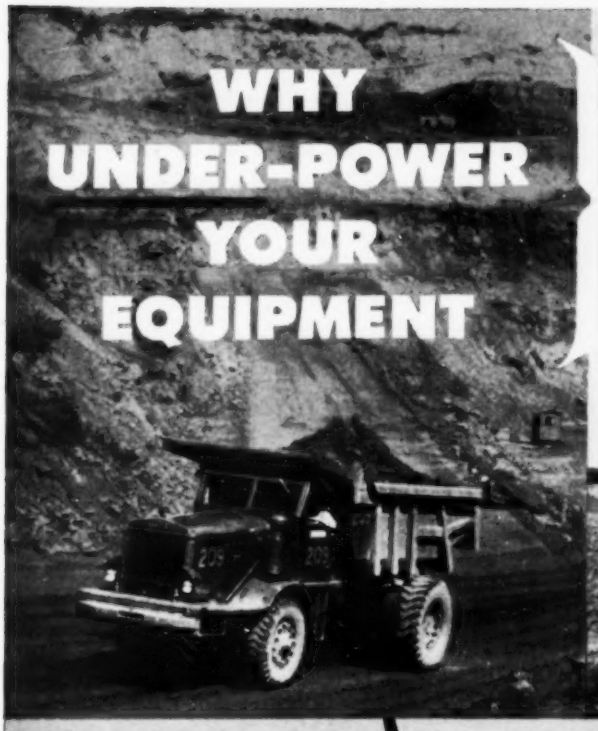
● *For detailed information about any of these points or copies of our latest catalogs, please write: Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio, or distributor nearest you.*

DISTRIBUTORS IN ALL PRINCIPAL CITIES OF THE WORLD

Austin-Western
CRUSHING, SCREENING and WASHING EQUIPMENT

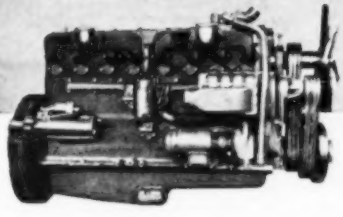
BALDWIN BLH LIMA-HAMILTON
Construction Equipment Division

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

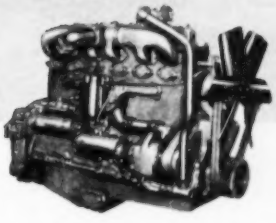


when BIG displacement Buda Diesels give you so many advantages?

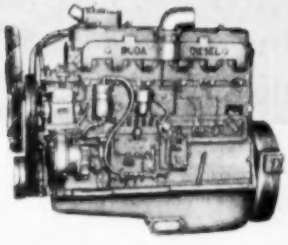
8-DAS-1125 Supercharged
350 HP at 2100 RPM



6-DA-779
185 HP at 2080 RPM



6-DAS-844 Supercharged
280 HP at 2100 RPM



BUDA Diesel Advantage:	Benefit To You:
● 12 to 18% MORE HORSEPOWER AT NORMAL OPERATING SPEEDS	Faster trips . . . heaped loads . . . more production . . . greater reserve . . . lower cost per yard
● 10 to 17% MORE USEABLE TORQUE	Greater lugging ability . . . less shifting and jerking . . . longer equipment life . . . reduced maintenance and downtime
● SMOOTHER, QUIETER OPERATION	Increased operator comfort . . . less exhaust fumes and smoke . . . greater efficiency . . . more production per shift
● EXCLUSIVE DYNA-SWIRL COMBUSTION	More horsepower per gallon of fuel . . . lower all around fuel costs

You can't afford *not* to know all the facts about BIG displacement Buda Diesels—the engines that will increase your production while reducing costs on every yard you move. Ask your nearby Buda Engine Distributor. He'll be glad to supply the facts. *The Buda Company, Harvey Illinois.* *Division of Allis-Chalmers Mfg. Co.*

BUDA
COAST TO COAST
FACTORY EXPERIENCED SERVICE AND PARTS

BC-29

BUDA

a Power-Full and Dependable Engine
FOR EVERY NEED

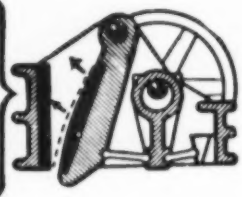
Manufacturers of Material Handling Equipment, Lifting Jacks, Maintenance of Way Products, Earth Drills and Diesel and Gasoline Engines

Does your jaw crusher crush rock or "saw" rock?

If you were to saw rock, the rubbing action would soon wear out the saw's teeth. The same thing happens to the jaw plates of a crusher when the crushing action is a rubbing action—the jaw plates wear out quickly!

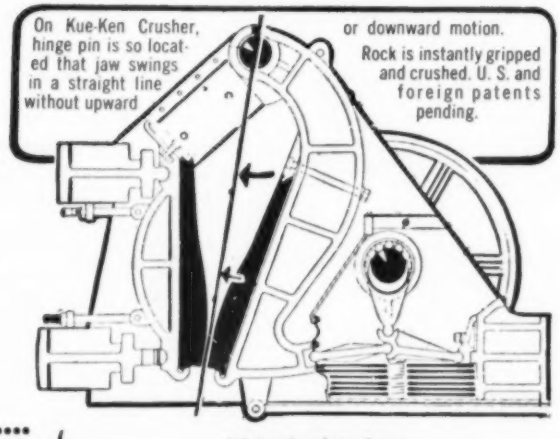
On overhead eccentric type crusher, moving jaw forces rock both up and down causing severe rubbing and wear on jaw plate.

On Blake type crusher, unbalanced action of toggle-driven swing jaw imparts upward motion to rock causing terrific abrasive action on jaw plates.



No jaw crusher actually saws rock but "sawing" is symbolic of the up-and-down, crushing-by-rubbing action of other crushers. Kue-Ken works on the compression-without-rubbing principle . . . there is a direct crushing action. Kue-Ken's jaw plates outwear those of other crushers up to 10 times and more!

On Kue-Ken Crusher, hinge pin is so located that jaw swings in a straight line without upward or downward motion. Rock is instantly gripped and crushed. U. S. and foreign patents pending.



KUE-KEN CRUSHERS

"LOWEST COST-PER-TON CRUSHING"

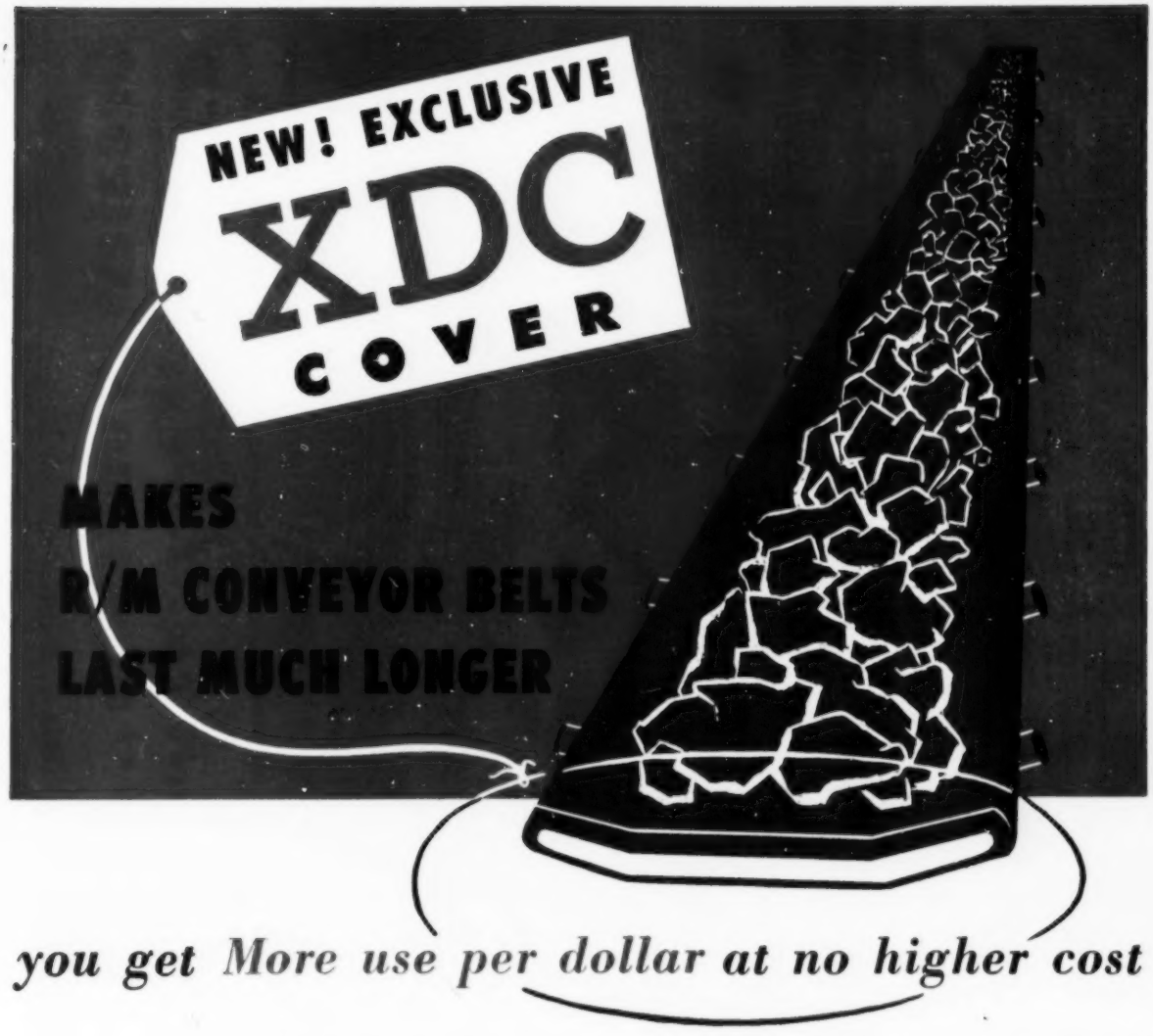
Jaw Crushers · Gyracone Crushers · Overhead Eccentric Crushers · Revolving Screens · Classifiers · Feeders · Rib Cone Ball Mills · Concentrating Tables · Vibrating Screens

Write for brochures

STRAUB MFG. CO. · 540 CHESTNUT · OAKLAND, CAL.

DEALERS: **LUND MACHINERY CO.**, Salt Lake City, Utah; **CLOSNER EQUIPMENT CO.**, San Antonio, Texas; **WASHINGTON MACHINERY & STORAGE CO.**, Seattle, Wash.; **CONSTRUCTION EQUIPMENT CO.**, Spokane, Wash.; **CONTRACTORS EQUIPMENT CO.**, Portland, Ore.; **MILLER MACHINERY CO.**, Missoula, Mont.; **ANAHUAC MACHINERY CO.**, Mexico City, Mexico; **UNIVERSAL EQUIPMENT CO.**, Vancouver, B. C.

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor. Broad and Arch Streets, Philadelphia, Penn.
Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne, England



you get More use per dollar at no higher cost

Now, an amazing new conveyor belt cover compound developed by Raybestos-Manhattan provides phenomenal resistance to wear and tear. Most conveyor belt failures start with wear of the cover. "XDC" Cover greatly extends the life of R/M Conveyor Belts by giving protection never before attained against wear, abrasion, cuts and tears which lead to costly internal damage. The new "XDC" Cover greatly increases the benefits of Raybestos-Manhattan's other outstanding developments in conveyor belt design . . . Constructions like extra flexible RAY-MAN "F," extra-cushioned HOMOCORD, HOMOFLEX and extra-high tension RAY-MAN. This major advance in rubber engineering puts longer life, "More Use per Dollar" into tough, dependable R/M Conveyor Belts. When you are thinking about conveyor belts, call an R/M representative.

R/M

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Bowling Balls

Greater Production...

with the new "ALL AMERICAN"

DIAMOND

"77" portable crushing and screening plant

REPORTED FIELD PRODUCTION: 450 TONS PER HOUR* OF ¾" AGGREGATE!

24" x 7' DIA. ROTOR LIFT
10" x 36" JAW CRUSHER
ALL 30" BELT CONVEYORS
V-BELT DRIVES
36" x 22" ROLL CRUSHER
4' x 12' VIBRATING SCREEN—2½ DECKS—IN TRAVEL POSITION
HYDRAULIC MECHANISM FOR RAISING AND LOWERING SCREEN TO TRAVEL POSITION
FIELD TESTED FEATURES
DELIVERY CONVEYOR RAISED TO TRAVEL POSITION

"Worth Waiting For!" Says Howard Ganley!

Howard Ganley Inc., General Contractor, on the job relocating state Highway 65 just south of Minneapolis is producing 400 tons per hour of aggregate from a pit containing 25% to 35% material to be crushed!

"We're Sold On The '77'"

Northwest Sand & Gravel Co. of Virginia, Minn., reports production of 250 tons per hour of ¾" minus aggregate in 55% crush of extremely hard rock!

* LaVoy & Scheffler of Fargo, North Dakota, is producing up to 450 tons per hour of ¾" minus aggregate in 25-55% crush!

SPECIFICATIONS

Overall Length	42' 5½"
Overall Width	9' 0"
Overall Height (Operating)	15' 3½"
Overall Height (Travel)	13' 6"
Travel Weight (Approx.)	64,000 lbs.
H.P. Required (Two Units)	130-140 H.P.
Wheelbase	20' 11" With Tandem Dolly
Number Of Front Wheels (Optional)	4 (Dual Wheels—8 Fx20—12 Ply Tires
Number Of Rear Wheels	4 (Dual Wheels—8 Fx20—12 Ply Tires
Jaw Crusher	10" x 36" (Roller Bearing)
Roll Crusher	36" x 22" (Dual Gear—Roller Bearing)
Vibrating Screen (Set at 18°)	4' x 12'—2½ Decks
Rotor Lift Drum	24" x 7" Dia.
Belt Conveyors	All 30" Wide
Screen Lowering Mechanism	Hydraulically Operated
Engine	1 Belt
Engine Shaft Drive From Power Unit at Side of Plant	
Capacity	175-225 Cu. Yds. Per Hr. (Based on 10% Oversize Material Passing 1" Screen)

OPTIONAL EQUIPMENT

1. Single or Double Axle Front Dolly
2. Sand Reducer
3. Chip Elevator
4. Mechanical Aid or Vacuum Brakes on Four Rear Wheels
5. Self-Contained Diesel Fuel Converter
6. Truck Loading Hopper with Plate Feeder and Grizzly

DIAMOND'S ANSWER TO INDUSTRY'S CHALLENGE!

The Industry said it couldn't be done!

They challenged Diamond to produce a portable crushing and screening plant that could out-produce anything capable of crushing and traveling on America's highways. Diamond has met their challenge with the new "77"—the *only portable plant* offering you so many outstanding features. It's truly an "All American!"

DIAMOND IRON WORKS CO.

DIAMOND IRON WORKS CO.
1756 N. 2nd Street, Minneapolis 11, Minn.

Please send me complete details on the new "All American" "77" Diamond Portable Crushing and Screening Plant.

Name _____ Title _____

Company _____

Address _____

City _____ Zone ___ State _____

drill holes faster

– get greater footage, better fragmentation, lower costs

Use a

Le Roi-CLEVELAND

T286 Self Propelled Dual Drill Rig

It's 2 Le Roi-CLEVELAND patented air feeds and drills with air-motor booms mounted on a 25-hp tractor

3 speeds forward... 1 speed reverse

One Le Roi Airmaster 600 cfm Compressor provides all the low-cost air you need to operate the T286 Dual Drill Rig, when it is equipped with Le Roi-CLEVELAND 4" drifters. A smaller compressor is sufficient, when the T286 is equipped with the 45-lb. H10 or 80-lb. H23 (3¼"-bore) sinker drills or 3½"-bore D25 drifter.

WITH a Le Roi-CLEVELAND T286, your man *drives* where he wants to go — over almost any kind of ground — and tows the compressor right along.

He drills and cleans holes as deep as 30' — in any direction — at any angle — with less air.

Have your nearby Le Roi distributor show you how this all adds up to faster drilling, better hole spacing, greater footage, better fragmentation, lower costs.

Write for Bulletin RD-21.

E-142

LE ROI COMPANY

A Subsidiary of Westinghouse Air Brake Co.
CLEVELAND ROCK DRILL DIVISION
12500 Berea Road • Cleveland 11, Ohio
Plants: Milwaukee, Cleveland and Greenwich, Ohio

HERE'S A GOOD ONE:

"Handled 280,000 tons of stone and lime, in two yards—that's our MICHIGAN's *7-year record"*

...SAYS THIS DELIGHTED OWNER

JOB FACTS

Job: Unloading, reloading agricultural lime; loading crushed stone into trucks and hoppers

Machine: MICHIGAN T-K-6—25' boom and ⅜ yd. clamshell

Owner: Terminal Materials Co., St Joseph, Michigan—two yards, St. Joseph and Lawrence, Mich.

Tonnage: 280,000—total for nearly 7 years; working in both yards 25 miles apart

"We give this machine the 'full treatment,'" says Bela Lindenfeld, Terminal president; "work it up to 18 hours per day, 52 weeks a year. We've written it off, yet have had a mighty tempting offer for it. But it's doing too good a job for us. MICHIGAN Air Control, ease of operation, speed, mobility—those are the reasons."

Says Orville Richardson, operator: "I spend half an hour a day on oiling, greasing and check-up; and the boss says it has sure paid off."

Isn't that exactly the kind of service you want? Watch these big, rugged MICHIGANS in action, note their speed and smooth precision—and you'll see how you, too, can Move More with a MICHIGAN. Talk to your MICHIGAN dealer; and write for interesting, helpful booklet, "Get More Yardage Through Air Power."

***These are the pay-off reasons why you Move More with a* MICHIGAN**

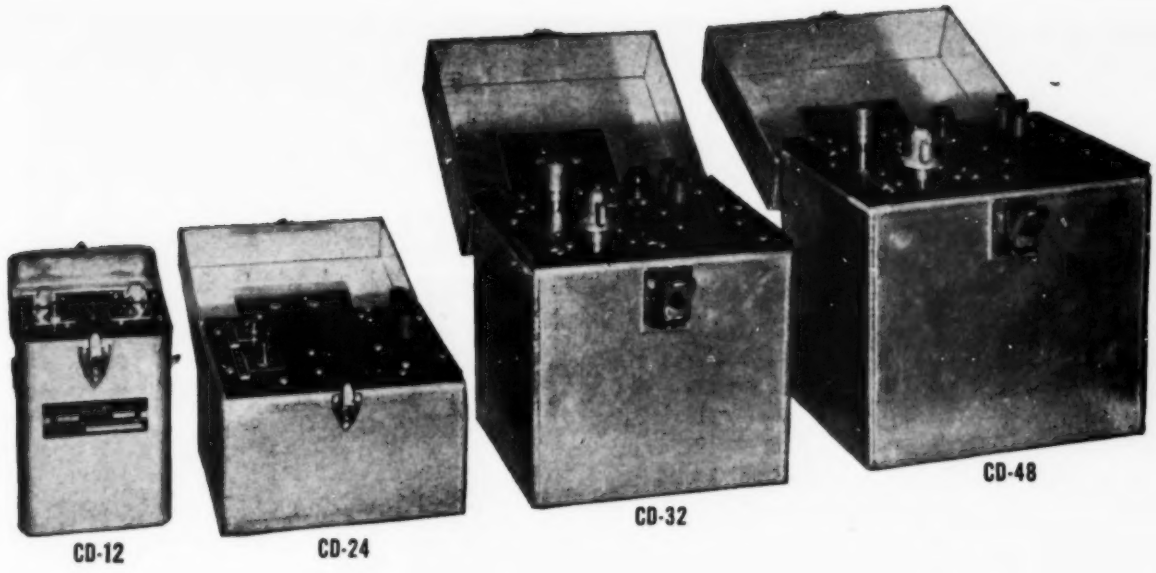
- **MICHIGAN Air Control**—fast, smooth eliminates fatigue, increases yardage
- **Rugged Construction**—built to withstand extremes of hard service
- **Easy Maintenance**—no complicated mechanical linkage; greasing takes only a few minutes

CLARK EQUIPMENT

Construction Machinery Division

CLARK EQUIPMENT COMPANY

Benton Harbor 450, Michigan



For more powerful, more dependable, safer electric blasting, use Du Pont CD Blasting Machines

You can fire any conceivable type of blast . . . large or small . . . on the surface or underground . . . with maximum safety, efficiency and economy with Du Pont CD (Condenser Discharge) Blasting Machines—newest development of Du Pont Explosives Research.

Du Pont CD Blasting Machines offer a simple and satisfactory method of firing either primary or secondary blasts. These four lightweight, portable power sources have capacities ranging from 20 holes in straight series to 1200 holes in parallel series. Safety is greatly increased with Condenser Discharge Machines because power *cannot* reach blasting circuits except by the deliberate action of the operator.

These machines eliminate maintenance of permanent firing lines and dependence on motor generators. They have no moving parts, require no physical effort as with mechanical-type machines, and are extremely easy to operate. Long-lasting radio-type B batteries charge the condensers, light up a pilot lamp when they're fully charged. Shots are fired only by turning on a firing switch. Terminals are dead until the instant of firing.

It's easy to fire large or small shots with maximum safety using Du Pont CD Blasting Machines. Ask the Du Pont Explosives representative in your area for complete information about them. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

Characteristics of Condenser Discharge Blasting Machines

Model	Rated Voltage	Capacity with Leading Lines Not Exceeding 3.0 Ohms Resistance			
		Straight Series		Straight Parallel	Parallel Series
		Primary	Secondary		
CD-12 Weight 4 lb Width 4 in Length 5¼ in Height 7 in	120	20	30	NR*	NR*
CD-24 Weight 12 lb Width 7¼ in Length 8¼ in Height 6½ in	240	50	75	NR*	240 (6 series of 40 each) (8 series of 30 each)
CD-32 Weight 22 lb Width 9½ in Length 9½ in Height 10½ in	320	50	125	30	480 (10 series of 48 each) (12 series of 40 each)
CD-48 Weight 27 lb Width 9½ in Length 11 in Height 12¼ in	480	50	200	60	1,200 (24 series of 50 each) (30 series of 40 each)

*NR means not recommended for the purpose.

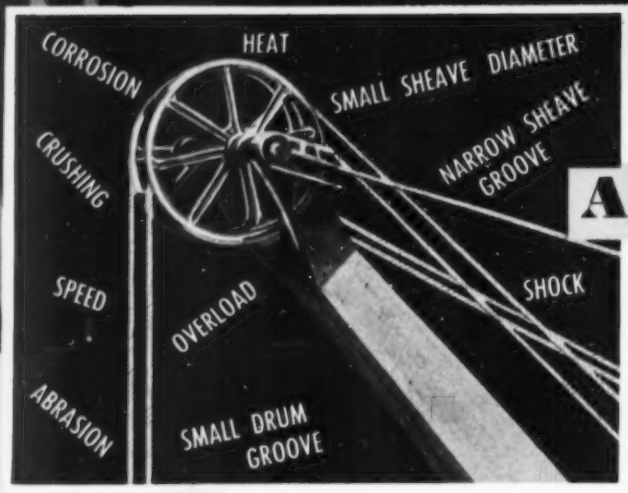
DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

reduce your WIRE ROPE costs



BERGEN APPROVED

wire rope lasts longer— costs *less* to buy— *less* to maintain . . . .

Under ordinary operating conditions wire rope is subjected to many different kinds of wear. Friction, shock, bending, abrasion, corrosion are some of the most common destructive forces. But modern wire rope designing has made available such wide selections of metals and rope constructions that even the most difficult service requirements can be overcome.

When wire rope is properly selected to meet specific operating conditions it will cost less — serve better — last longer.

That is why Bergen *Approved* Wire Rope gives such satisfactory and economical service to its users. The Bergen system of writing wire rope specifications assures every buyer that he is getting the best possible rope to meet his particular operating conditions. Let us show you how we have helped hundreds of users to make substantial savings on their wire rope purchases.

Write today for BERGEN'S "Guide to Selecting Wire Rope."

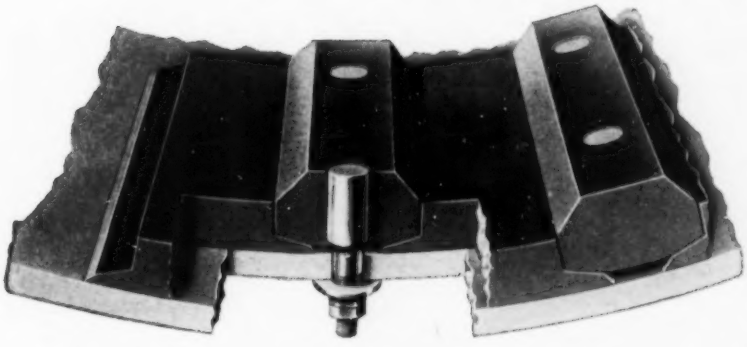
BERGEN WIRE ROPE

BERGEN WIRE ROPE COMPANY

14 Gregg Street, Lodi, New Jersey

You can cut costs

in your grinding operation with U·S·S Lorain Rolled Plate Linings



- Linings are in easy-to-handle sections, accurate sizes to permit quicker installation
- Plates can be heat-treated to compensate for localized wear
- Correct sizes make tighter joints . . . eliminate shell wash
- Lift bars are designed for correct cascade action . . . height of lift varied according to conditions
- Bolt supports located near the bottom of the bar . . . last for life of the lining

● You can do more and better grinding, for less money, with U·S·S Lorain Rolled Plate Linings. The output of your mill increases when the usable diameter increases, and this is just what happens when rugged Lorain *rolled steel* plates are used instead of ordinary castings. Lorain Liners can be much thinner due to their superior strength. Their lighter weight simplifies handling.

You save money with U·S·S Lorain Rolled Plate Linings because they are readily installed and require less maintenance. The plates are accurately made and are in easy-to-handle sections for ready use. Severe localized wear at feed or discharge end of the mill can be balanced by heat-treating. Lorain Liners are so durable that they remain serviceable until they're almost paper thin. You benefit from the use of the entire plate . . . there is less waste, longer wear. Mill down-time will be reduced and so will your upkeep costs.

The accurate size of U·S·S Lorain Rolled Plate Linings assures tight fit between the ends of the plates and between plates and lift bars, eliminating shell wash.

U·S·S Lorain Rolled Plate Linings are available—in the diameter, length and thickness best suited to your operating conditions—through leading mill manufacturers whose names will be furnished upon request.

U·S·S GRINDING BALLS are carefully made of special composition steel to take long, rough wear evenly. Samples from each production lot are thoroughly tested to make sure of surface hardness and maximum hardness penetration. They come in eleven sizes from $\frac{3}{4}$″ to 5″. For further information just return the coupon below.

United States Steel Corporation
Room 4244, 525 William Penn Place
Pittsburgh 30, Pa.

Without obligation on my part, please send me your FREE booklet on U·S·S Grinding Balls.

Name .....

Company .....

Address .....

City ..... State .....

UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S LORAIN ROLLED PLATE LININGS AND U·S·S GRINDING BALLS

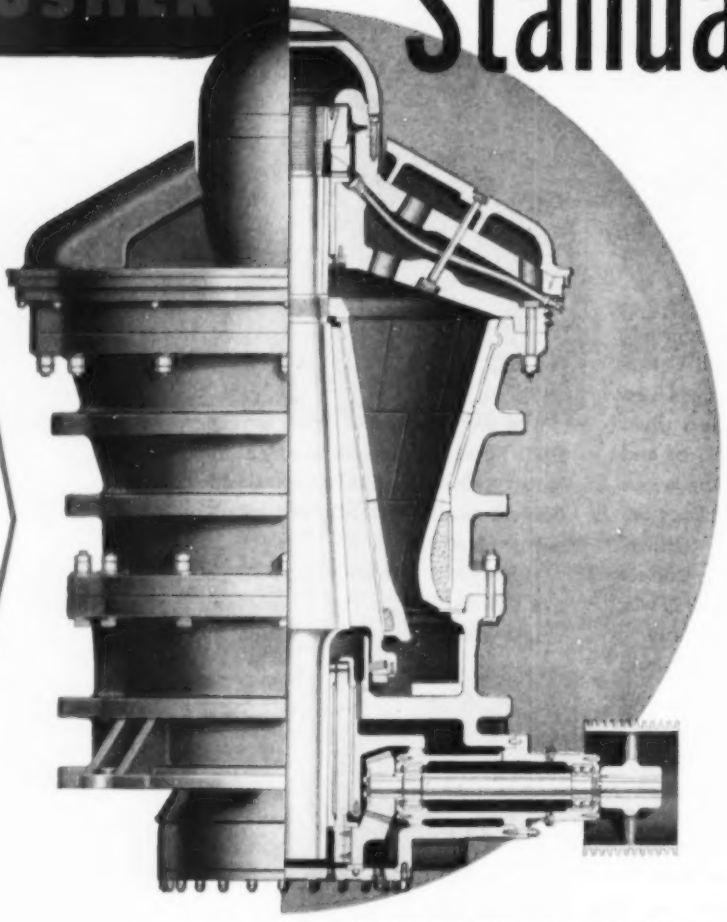
USS

3-2023

UNITED STATES STEEL

Setting New Crusher Standards

SUPERIOR
Primary & Secondary
CRUSHER



Improved lubrication throughout, including spider.

Sturdy all-steel construction . . . with heavy external ribbing.

Greater operating flexibility than any comparable crusher. Eccentric setting and speed can be varied to suit your capacity requirements.

More effective dust seal.

Vertical adjustment compensates for wear and maintains uniformity of product by means of adjustable spider suspension or *Hydroset* control. This hydraulic control permits quick product size setting and makes it easy to clear crushing chamber after shutdown.

Easy-to-replace, long life bearings.

Free-fall discharge.

THE *SUPERIOR* CRUSHER — with all these important features — requires fewer manhours to maintain . . . results in less shutdown time . . . less in the way of maintenance. And, whether on primary or secondary crushing, it will produce these savings for years to come. The A-C representative in your area will give you complete, detailed information. Call him, or write: Allis-Chalmers, Milwaukee 1, Wisconsin. A-3648

Superior and *Hydroset* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Hammermills | Jaw Crushers | Gyratory Crushers | Grinding Mills | Vibrating Screens | Kilns, Coolers, Dryers

This brick slashed reline time 75%!

HERE's a report on a recent check of hot zone linings in rotary cement kilns now using Permanente Periclase-Chrome bricks:

At five plants selected at random from our customer list—with capacities ranging from 1,260,000 to 3,500,000 barrels per year—Permanente Periclase-Chrome brick linings cut down-time for relining an average of 75% compared to the linings previously used!

In each of the five plants, Permanente Periclase-Chrome brick improved service—gave an average of 10 months service compared to an average of approximately 2 months with the other type brick. In addition, fewer shut-downs resulted in substantial savings in cost of materials for relining.

Such exceptional performance was possible because Permanente Periclase-Chrome bricks are *especially designed* for hot zone linings. This special design is the result of 10 years experience working with cement kilns throughout the country. Today, it's *your* best bet for higher production.

SEND FOR BOOKLET giving installation procedures and for literature explaining all the advantages of Permanente Periclase-Chrome bricks. If an appraisal of your kiln performance would be helpful, Kaiser Chemicals will be glad to work with you. Installation service at no extra cost. Standard brick sizes available, both burned and chemically bonded. Complete facilities insure superior service. Call or write principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Basic Refractory Bricks and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase

"Sinclair TENOL has permitted remarkable performance!"

says Wayne Pressnell, President, Columbia Rock Products Corp., Columbia, Tenn.

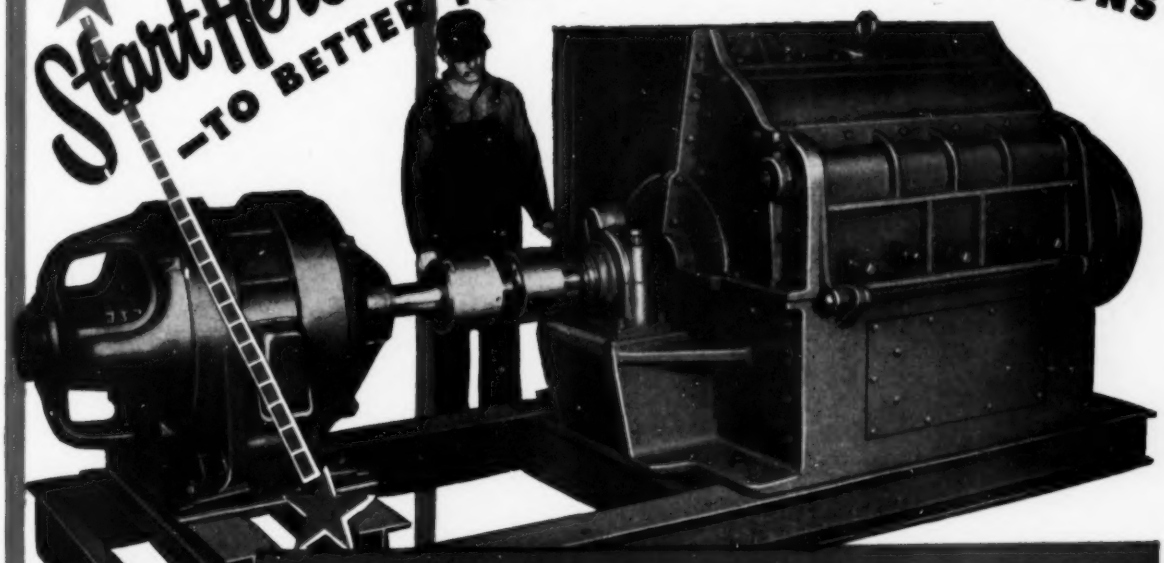
Producing commercial stone and agricultural limestone in this 50′ quarry is rough on the equipment of the Columbia Rock Products Corporation . . . *yet mechanical failures are rare.*

Mr. Pressnell writes, "We operate 11 diesel units including Euclid Trucks, Motor Patrol Graders, Bulldozers, Draglines and Shovels – all lubricated with Sinclair TENOL®. One Lorain Shovel, powered by Caterpillar engine has been credited with 5000 operating hours over a 2-year period without any mechanical failure. Another of our shovels has chalked up 20,000 operating hours over a 10-year period – *10,000 hours without overhaul.* Sinclair TENOL has certainly helped our equipment give us a remarkable performance record."

Mr. Pressnell's choice of Sinclair TENOL has helped slice off a large part from the maintenance costs of his company. Why not let TENOL do the same for you. Phone your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N.Y.

SINCLAIR TENOL
prolongs engine life

Start Here —TO BETTER YOUR GRINDING OPERATIONS



WILLIAMS *Heavy Duty* HAMMER MILLS

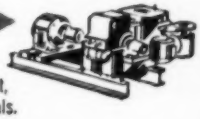
OTHER WILLIAMS EQUIPMENT

▲ ROLLER MILLS
—IMPACT and DRYER MILLS
—for fine grinding to 400 mesh or micron sizes

▲ AIR SEPARATORS
— any type; for precision control and high production in fine grinding

▲ VIBRATING SCREENS
1 to 3 decks, — in any size for any job. open or enclosed.

HELIX-SEAL MILLS
—for dust-free grinding, and for wet, sticky, greasy materials.



Also: COMPLETE "Packaged" PLANTS for crushing, grinding, separating.

★ **INCREASE YOUR OUTPUT**
★ **IMPROVE PRODUCT QUALITY**
★ **REDUCE YOUR COST-PER-TON**

★ No matter how tough your grinding, crushing or shredding job—no matter what the material; mineral, vegetable, chemical or animal—there's a Williams Hammer Mill engineered especially to **get the finished product you want in a single operation—A SAVING UP TO 50% IN PRODUCTION COSTS!** Extra primary and secondary crushers are unnecessary—foundations and buildings for additional machines, drives, conveyors and other equipment are eliminated—**A SAVING UP TO 75% IN EQUIPMENT COST!**

Many Williams exclusive design and construction features assure greater accuracy to meet the most difficult product specifications—and promise continuous satisfactory performance under the most severe operating conditions with an absolute minimum of maintenance.

Consult with Williams about increasing your grinding output and reducing your costs. Tell us about your operation at the time you **Write For Complete Catalog.**

★ **WILLIAMS TESTING LABORATORY WILL HELP YOU**
Complete testing and research facilities are maintained by Williams to find the right answers for you on every size reduction problem. Write for information.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
802 ST. LOUIS AVE. ★ ★ ★ St. Louis 6, Mo.

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

SAMSON BLOCK CO. ADDS ERIE PORTABLE TRUCK MIXER PLANT — OPERATION NOW IS AMONG FLORIDA'S FINEST

"ERIE EQUIPMENT GIVES US ACCURATE BATCH CONTROL AND A PLANT ONE MAN CAN OPERATE".

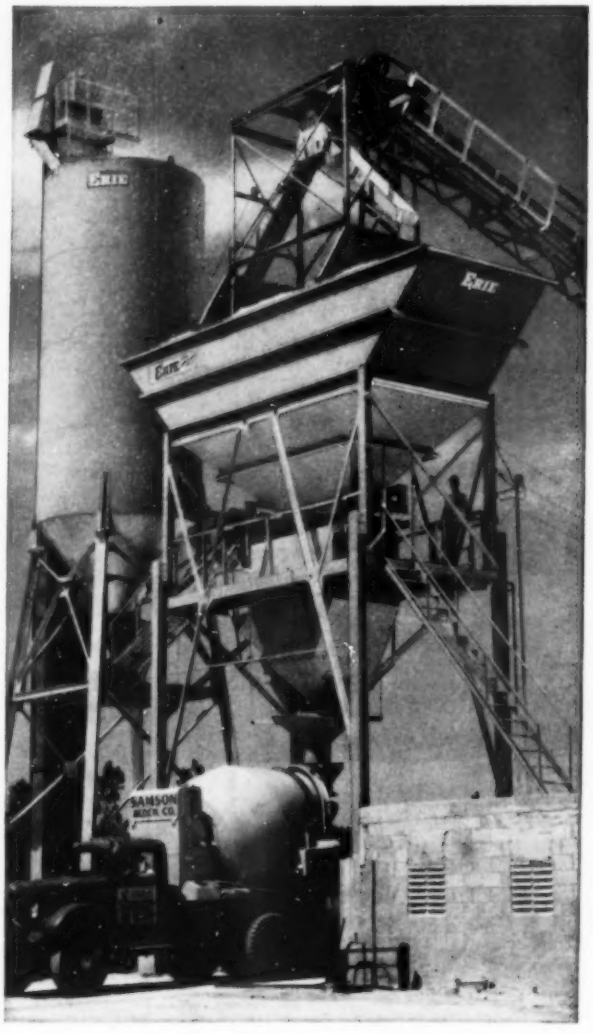
- - - MURRAY LEVINE

At Homestead, in the bustling Miami area, is one of Florida's best equipped concrete batching plants. It's the Samson Block Co., and it's the property of brothers Sam and Murray Levine.

The Levines launched themselves into this new venture seven years ago on a rather simple premise: "Make it good."

With quality as the keynote of production, Samson blocks have been accepted in greatly increasing volume year after year. It was inevitable that they should one day expand into the ready-mixed concrete field.

When they did, quite naturally, they shopped for equipment that would do the best job for them. They chose Erie. Here's why, in their words: "To manufacture quality concrete it takes not only skillful help and quality materials but the best equipment is needed, too."



One man operating this equipment produces 240 cu. yds. of specification concrete per hour. Installation includes: 3-compartment GTB-79 portable Aggre-Meter; BWC 4 cu. yd. weighing batcher; CSB 592 bbl. circular cement silo and DWK 36-cu. ft. cemeter. Sold by Neff Thomas Machinery Inc., Miami, Florida.

If you would like additional information on Erie equipment, write Dept. Q14

Cable Address: EXIMPORT

ERIE

STEEL CONSTRUCTION COMPANY

314 GEIST ROAD • ERIE, PENNSYLVANIA

No. 1 of a series

How Bemis makes GOOD multiwall bags for you

A. R. Ewing, director of the Bemis Paper Control Laboratory, has twenty-nine years' experience in this field. He is shown operating the laboratory's electro-hydraulic tensile tester, one of the many precision devices that make the Bemis laboratory probably the most complete in the country devoted to bag papers.

Use good paper . . . test it . . . prove it!

Bemis sets high standards for the various papers used in making Bemis Multiwall Bags. And we are able to maintain these standards because we buy our paper from a variety of top sources. These multiple sources are the key—if one should fall below par, the others are there to supply our needs. We don't have to take less than the best.

Bemis

General Offices—St. Louis 2, Missouri
Sales Offices in Principal Cities

You get more—much more—than a machine when you buy a MARION. Some of the other important benefits for you:

A GOOD NAME—Since 1884, MARION has been a trusted name in excavating machinery.

GOOD MACHINES—MARION has consistently pioneered the major refinements and developments in power shovel design and developments. These machines are built to the world's highest standards of quality.

—World-wide availability of parts and service is a big plus, for international travel for excavating machinery is commonplace today.

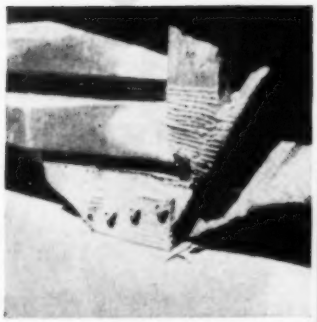
THE MOST COMPLETE LINE—No other manufacturer offers the variety of types and sizes of machines available from MARION. It is easy to get the right machine for your particular requirements.

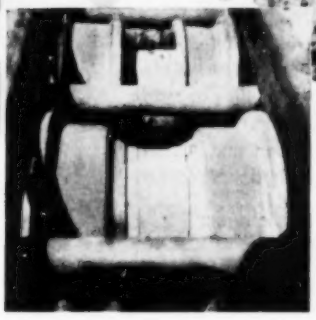
Before you make the sizable investment required to purchase any excavating machine, be sure to learn what these and other MARION benefits can mean to you.

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

from ¾ cu. yd. to 45 cu. yds.





Tractor-Scraper Parts rebuilt with

VICTORALLOY

outwear new parts 2 to 1

In addition . . .
VICTORALLOY cuts rod cost and reduces welding time 25 to 50%.

HERE'S HOW:

VICTORALLOY is an all-position rod . . . vertical surfaces, end bits, blades, etc., can be hardfaced in position.

High burn-off rate, 6 lbs. per hour, speeds application.

One pass with **VICTORALLOY'S** high, rounded bead deposits as much metal as most rods do in two passes.

No slag interference—you eliminate chipping and cleaning.

Try **VICTORALLOY** NOW. Order a supply from your **VICTOR** dealer TODAY.

VICTORALLOY is designed especially for track rollers, idlers, grousers, end bits, cutting edges, tamper feet and other parts subjected to continual abrasion and severe impact. Its high chromium content produces a hard, polished finish that reduces friction . . . and doubles working life.

Write for literature on complete line of hardfacing alloys by VICTOR. Dealer inquiries invited.

VICTOR

Welding and Cutting Equipment Since 1910

292

VICTOR EQUIPMENT COMPANY

3821 Santa Fe Ave.	844 Folsom Street	1312 W. Lake St.
LOS ANGELES 58	SAN FRANCISCO 7	CHICAGO 7

JUST CRY BABIES

when they meet their match

Abrasion, Vibration and Fatigue don't like the treatment they get when they buck up against Super-Tempered Precision Space Screens.

These durable screens effectively resist the most destructive efforts of this troublesome trio. They save you money in less downtime . . . give you longer, more dependable service. That's because they're made of hard and tough super-tempered steel, precision crimped and woven on powerful hydraulic looms.

To order, write or phone our nearest sales office.

THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia

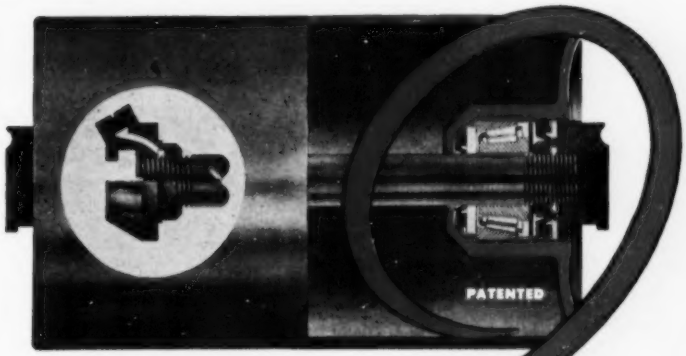
SUPER-TEMPERED
PRECISION SPACE SCREENS
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION CF&I

2010

NEW UST* Continental Idlers

*** UNIT-SEALED PRE-LUBRICATED TIMKEN BEARINGS**

Saves Grease!
Saves Labor!
Saves Belts!



STANDARD DUTY IDLER

CGC UNIT-SEALED
CGC PRE-LUBRICATED
CGC TIMKEN BEARINGS

Continental's Unit-Sealed "UST" Conveyor Idlers, incorporating Timken Bearings, Garlock Klozures, are the answer to the operator's prayer.

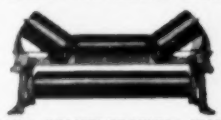
The Unit Bearing Assemblies—"sealed unto themselves" provide an ample but not excessive grease reservoir. This represents a saving of grease and further eliminates any possible migration of the grease from upper to lower bearings on inclined rolls. The lubricant is a top quality water repellent grease of a stable consistency with a wide temperature range for long life.

Most important—this construction permits operating the Continental "UST" Idler without relubrication for 1-2-3 years depending upon the severity or character of conditions.

For detailed information on these idlers write for Bulletin PQ-116

SELF-ALIGNING FLAT BELT IDLER

RUBBER DISC IMPACT IDLER



GRAIN CONCENTRATION IDLER

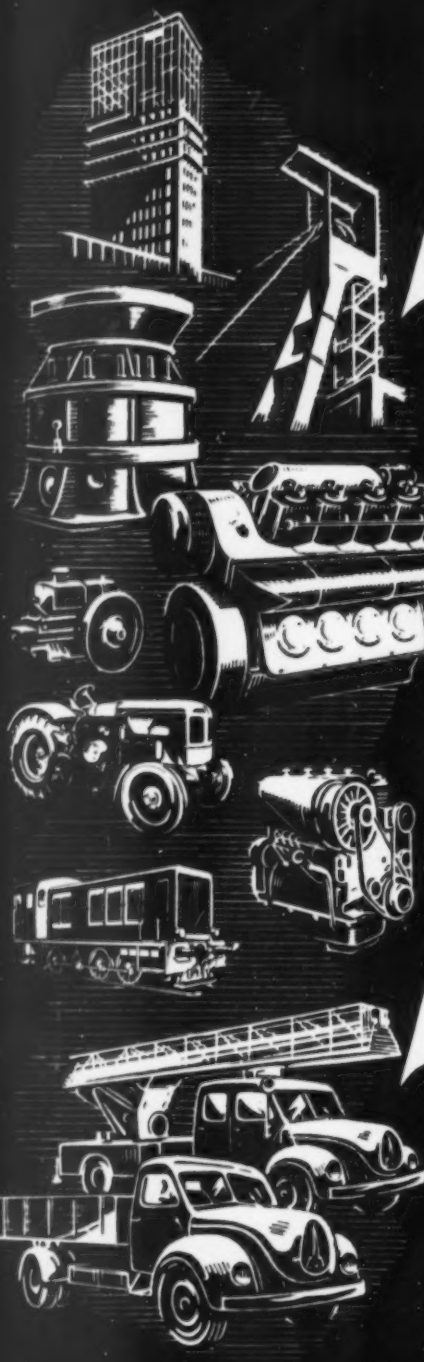
SELF-ALIGNING TROUGHING IDLER

***Long Life*— THE ULTIMATE IN MINIMUM MAINTENANCE**

CG—5209

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS • NEW YORK CGC MANUFACTURERS



SINCE 1856

HUMBOLDT

Mines Equipment, Mineral Dressing Plants, Crushing and Grinding Machinery, Cement Factories, Metallurgical Works, Coal Preparation Plants, Steel Constructions for Buildings and Bridges.

SINCE 1864

DEUTZ

Otto-, Gas-, Diesel-Engines for Every Purpose of Two- and Four-Stroke design. Output range 3-1650 H.P. Cooled by water or air. Diesel-powered tractors, Diesel locomotives, Gas producer plants.

SINCE 1864

MAGIRUS

Trucks and busses driven by air cooled DEUTZ Diesel engines. Vehicles for municipal services, Fire ladders, fire engines, Fire fighting water trucks, Two-wheeled ladders, Fire fighting equipment.

KLÖCKNER-HUMBOLDT-DEUTZ AG · KÖLN

KLÖCKNER - HUMBOLDT - DEUTZ A.G. **KÖLN - DEUTZ, GERMANY**

January 1954

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

Cubing with turntables at York Stone & Supply Co., York Pa. (See page 260)

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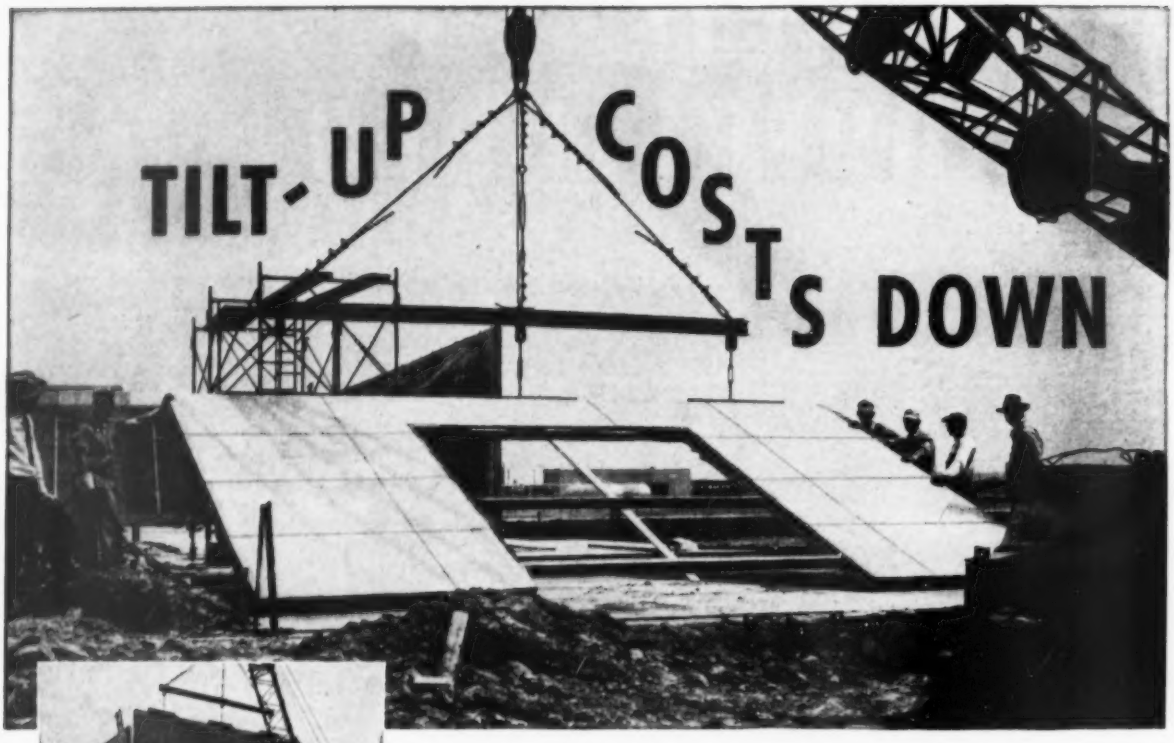

CITIES SERVICE COMPANY WAREHOUSE
Fairfax Industrial District, Kansas City, Kansas

Architect:
ANDREWS & HUTCHENS, Kansas City, Mo.

General Contractor:
H. H. FOX CONSTRUCTION CO., Kansas City, Mo.

Concrete Contractor:
ROHRER CONTRACTING CO., Kansas City, Kansas

Ready-Mix Lone Star Concrete:
CONCRETE MATERIALS, INC., Kansas City, Kansas

Cities Service Kansas City Warehouse Illustrates Tilt-up Advantages

● Adaptability of tilt-up construction to a wide range of uses and architectural effects is exemplified by numerous recent structures, concreted with Lone Star Portland or 'Incor' 24-Hour Cement, as job conditions dictated.

This new Cities Service Kansas City Warehouse, with 45,000 sq. ft. of floor space, is as pleasing to the eye as it is to the pocketbook. Concreted throughout with Lone Star Portland Cement, the 31 panels, each 24′ x 14′9½″ x 5″, were cast on the concrete floor, lifted into position in jig time.

Tilt-up construction saves construction time, reduces form and labor costs, often makes possible important economies, not only in one-story industrial and commercial buildings but in other types of buildings, from homes and garages to multi-story structures.

Speed Winter Work with 'Incor'

In scheduling and estimating, be sure to figure the advantages of dependable 24-hour service strength with 'Incor'*, America's FIRST high early strength portland cement. With 'Incor', panels cast one day are lifted into position the next. This holds true even in Winter, with only 24 hours full heat protection, instead of the usual 2 or 3 days—a further economy worth considering. *Reg. U. S. Pat. Off.

LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. • BIRMINGHAM
BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS. 18 MODERN MILLS, 129,000,000 SACKS ANNUAL CAPACITY

The CONCRETE MANUFACTURER

January 1954

Bright Outlook

THIS issue of THE CONCRETE MANUFACTURER is properly speaking neither a review nor a forecast issue, although we have attempted to indicate in one article (page 242) some of the trends noted last year, and some of the influences which we believe will have a bearing on the prosperity of the concrete industries in the months ahead. We hope that what we have said on these subjects will seem significant to some of our readers, but there is an entirely different aspect of the matter which we would like to discuss here.

Probably the outstanding phenomenon of 1953, so far as the concrete industries are concerned, was the strong evidence that the seller's market of so many years duration was at last playing out. In the year just closed there was not only more competition, but noticeably stiffer competition, and there was some weeping and wailing on the part of people in all branches of the industries to whom this reversal seemed an uncommonly cruel twist of fate.

We have tried especially hard to scatter throughout this January issue all the evidence our limited space would permit to indicate what is being done and planned in the fields of promotion and quality control to prepare the concrete industries for the tougher world which looms ahead. For make no mistake about it, the years just ahead are going to be measureably tougher and more demanding than the period through which we have been coasting so easily.

Many of the people in our industries have never known the work that must go into (or the satisfaction which can result from) tough, competitive selling. The years just ahead should be a revelation to them, for the easy-buck, hand-out world we're leaving behind has in some measure cheated all of us. It may be fun for a while to avoid customers as though they were afflicted with the plague, but we think this reversal of the intended order of things has begun to pall upon everyone concerned.

It isn't going to be easy to shift our sights. Points of view and habits of thinking accumulated over almost a decade can't be changed overnight, and it seems certain that a fair number of people will not survive the period of adjustment. We will watch them drift into other less rigorous fields of endeavor with at least a twinge of regret, but we will be inclined to regard the occurrence as simply a long-overdue and entirely natural attrition.

When the boys pull out to roll their hoops in easier pastures, we believe the men who are left in our industries will find greater rewards and more enduring satisfaction than any hand-out system can ever provide. This single fact, far more than any other element in the present picture, persuades us that the outlook is bright, indeed.

William M. Avery

Another Leader★ IN THE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS!

California "Sunshine" Plant Sticks to Besser because of LOW MAINTENANCE and LESS DOWNTIME

Hazard Concrete Products, Inc., San Diego, operates one of the most modern block plants in Southern California. They installed their first Besser Automatic Vibrapac in 1948 and have since added *two more front pallet feed* Automatic Vibrapac machines.

Why did the company go back to Besser when they needed additional equipment to expand their production facilities? Because they learned from actual experience that the heavy duty Vibrapac machines turn out high quality masonry units on a fast production basis with a minimum of downtime.

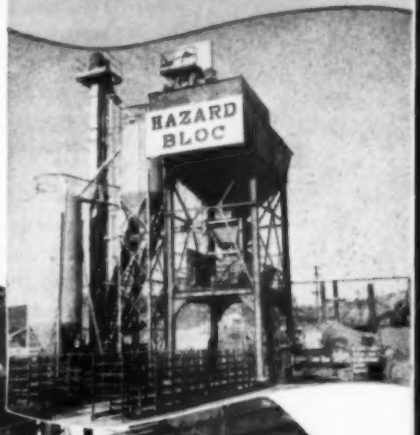
Hazard required the finest and most dependable equipment to meet the ever increasing demand for high quality block. Like so many other progressive block plants they put their complete faith in Besser equipment.

BESSER MANUFACTURING COMPANY • Alpena, Michigan, U. S. A.

Complete Equipment for Concrete Products Plants

(Above) Bruce Hazard, President, and two of his men, Howard Long and Fred Strong, discuss block deliveries.

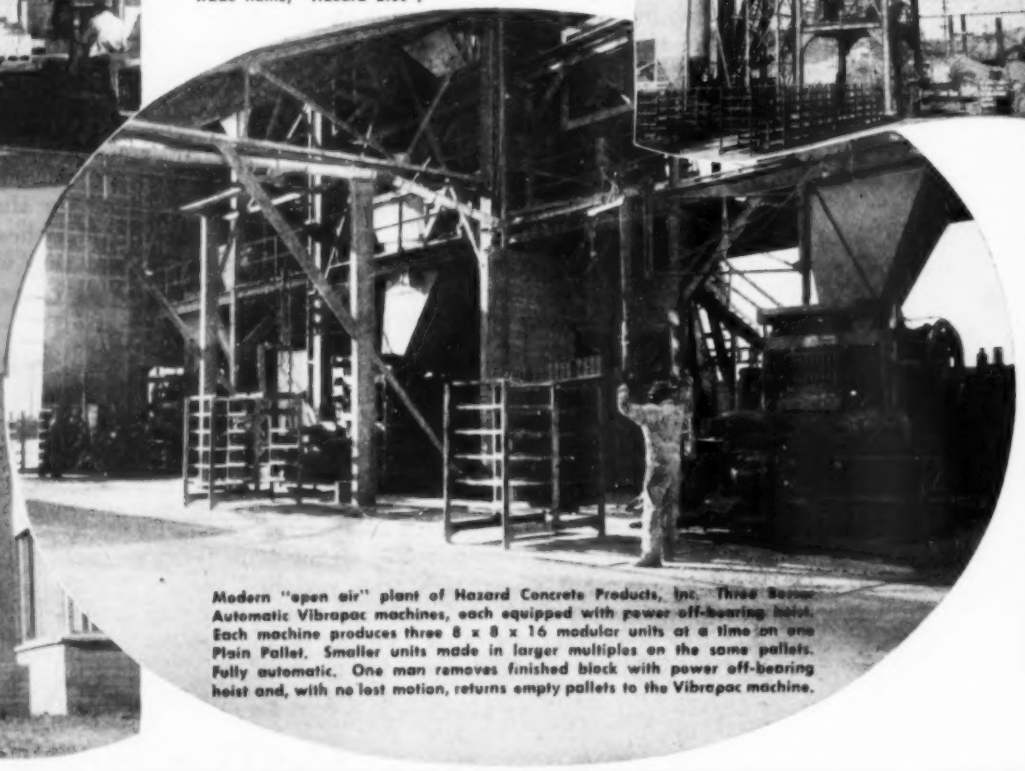
★ This is the 105th of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.



(Right) The first Vibrapac machine installed at Hazard Concrete Products, Inc. Note emphasis on trade name, "Hazard Bloc".

One of the big motor trucks used for delivering "Hazard Bloc".

Entrance to apartment house built with "Hazard Bloc". Note pleasing architectural design created with these block.



Modern "open air" plant of Hazard Concrete Products, Inc. Three Besser Automatic Vibrapac machines, each equipped with power off-bearing hoist. Each machine produces three 8 x 8 x 16 modular units at a time on one Plain Pallet. Smaller units made in larger multiples on the same pallets. Fully automatic. One man removes finished block with power off-bearing hoist and, with no lost motion, returns empty pallets to the Vibrapac machine.

BESSER

BATCH MIXERS · SKIP LOADERS · BLOCK & BRICK CUBERS · SUPER VIBRAPAC · SINTERING PLANTS · ACROW CENTERS · ROOF TILE MACHINE

A 7581-1PBC

news of the concrete industries

34th N.C.M.A. Convention, Slated for February 9-11, Promises Excellent Program

Plans for the 34th annual convention of the National Concrete Masonry Association, to be held at the Shoreham Hotel, Washington, D. C., February 9, 10 and 11 are practically completed.

According to N.C.M.A.'s President Sam Paturzo, this annual affair promises to be one of the most colorful and important conventions ever presented. In keeping with an established policy, there will be no exhibits at the convention this year. The meetings will officially get under way on Tuesday, February 9, with the general business sessions on Monday, February 8, devoted to committee meetings.

The convention will open on Tuesday morning, February 9, with an address of welcome by Ranah Camalier, Commissioner, District of Columbia.

The principal speaker for this opening day will be the Honorable Douglas McKay, United States Secretary of the Interior. Acknowledged to be one of the most popular members of President Eisenhower's cabinet, Secretary McKay is in great demand as a speaker for important occasions all over the country. His position as one of the most influential members of the President's cabinet places him in a strategic position to bring to the convention an interesting and informative message.

Inasmuch as this convention is being held in Washington, other well-known persons in the government will probably participate in the sessions.

One of the outstanding features of the program will be a dramatic panel presentation entitled "What Would You Do?" It is anticipated that this will be one of the most popular sessions of the entire meeting. It will highlight some of the major problems encountered by block manufacturers, and also the solutions to those problems.

During 1953 two state associations of the National Concrete Masonry Association—the Nebraska Concrete Masonry Association—and the North Carolina Concrete Masonry Association—participated in state-wide architectural competitions for the design of concrete masonry homes. Both of these competitions were extremely successful, according to the reports received from both of these associations; and it is anticipated that a review of the two competitions will be given during the N.C.M.A. program sessions.

California Pipe Concern Moves Plant to New Site

According to an announcement released by E. E. Jackson, vice-president of the American Pipe and Construction Company, formerly located at Oakland, Calif., the firm has moved its East Bay District manufacturing facilities and and offices to a new location on Alquire Road in the vicinity of Hayward, Calif.

Mr. Jackson stated that the new plant will permit expansion of the production rate of reinforced concrete pipe and that the firm soon will manufacture additional types of reinforced concrete pipe products.

N.A.H.B. Convention-Show To Stress Practical Note At Chicago, January 17-21

An intensive five-day study of the latest developments in building methods and a showing of building products will be the chief features of the tenth anniversary convention and exposition of the National Association of Home Builders, which will be held from January 17 to 21.

The "how-to-do-it" idea will be the underlying theme of the convention. Leading manufacturers will send more than 3,000 of their own representatives to the exposition, where they will explain and demonstrate the latest in building materials and equipment. About 300 exhibitors have reserved space in the display area of the Conrad Hilton and Sherman hotels. According to Paul S. Van Auken, convention-exposition director, this will be the largest affair to date in the association's history.

A major attraction at the exposition will be a "how-to-do-it sideshow" at the Conrad Hilton. On six specially erected stages six different building ideas will be demonstrated simultaneously. The demonstrations will be repeated at frequent intervals, so that builders can move from one stage to another and obtain a closeup view of each. At the Sherman Hotel exhibit there will be a presentation of various techniques of assembling low-pitched roof trusses and the latest methods and ideas for tilt-up walls.

Convention clinics and discussion meetings also will feature the "how-to-do-it" approach.

Coming Events

January 5-7, 1954—Atlantic City. 52nd annual meeting, American Road Builders' Association. Chalfonte-Haddon Hall.

January 17-21, 1954 — Chicago. Tenth annual convention and exposition, National Association of Home Builders. Conrad Hilton and Sherman hotels.

January 19 and 20, 1954—Milwaukee. 34th annual convention, Wisconsin Concrete Products Association. Plankinton Hotel.

January 24-27, 1954—Chicago. Annual convention and exhibit, Mason Contractors' Association of America, Inc. Sherman Hotel.

January 25 and 26, 1954—Niagara Falls, Ont., Canada. Fifth annual convention, National Concrete Products Association (Canada). Sheraton-Brock Hotel.

January 28 and 29, 1954—Toronto. Conference on prestressed concrete, sponsored by the Extension Department of the University of Toronto.

February 8-11, 1954—Washington, D. C. 34th annual convention, National Concrete Masonry Association. Shoreham Hotel.

February 15-19, 1954 — Chicago. 24th annual convention, National Ready Mixed Concrete Association, with machinery exposition. Conrad Hilton Hotel.

February 22-25, 1954 — Denver. Annual convention, American Concrete Institute. Shirley-Savoy Hotel.

February 24, 1954—San Francisco. 4th annual convention and meeting, American Concrete Agricultural Pipe Association. Fairmont Hotel.

February 25-27, 1954—San Francisco. 46th annual convention, American Concrete Pipe Association. Fairmont Hotel.

QUALITY CONTROL ranks high with ★★★★★★ Alwine BRICK COMPANY

The letter below from Mr. Charles E. Alwine pointedly explains how a Forney Compression Tester has aided his firm in maintaining quality control in concrete block manufacturing.

TELEPHONE 72

Alwine BRICK COMPANY

New Castle, Pa.

September 15, 1953.

Forney's Incorporated,
P.O. Box 310,
New Castle, Pa.

Gentlemen:

Nearly two (2) years have elapsed since we installed our Forney Compression Tester and we want to take this opportunity to inform you how well pleased we have been with our purchase. With this equipment installed in our own plant, it is so easy to make block tests at regular stated intervals as an aid in the keeping of the quality of our block where it should be and at the same time not to waste cement needlessly. One never receives any credit (nor a premium price) for blocks having strengths far beyond Code requirements. It is only when they fail to come up to requirements that a dissatisfied customer has been born.

On a number of occasions we have tested blocks before a prospective customer's eyes, when he raised a question about compressive strengths.

In closing we would state that we feel it was one of the wisest expenditures we've made and would do the very same thing over again.

Very truly yours,
Alwine Brick Company.
Charles E. Alwine

ccs/p

In 1951 The Alwine Brick Company of New Oxford, Pennsylvania, bought a Forney Compression Tester. Mr. Charles E. Alwine, in commenting on the Forney Tester states, "One never receives any credit (nor a premium price) for blocks having strengths far beyond code requirements. It is only when they fail to come up to requirements that a dissatisfied customer has been born." Mr. Alwine states also the purchase of a Forney Tester was one of the wisest expenditures ever made by his firm. Having a Forney Compression Tester in your plant will increase sales, give a better yield and improve customer relations. Forney Testers are especially designed for testing all sizes of blocks, cylinders, brick, tile and lintels right in your own plant. Keep accurate control of your manufacturing processes by daily testing. Do as Alwine and hundreds of others have done. Install a Forney Compression Tester in your plant and be sure of quality control each day. Write for a completely descriptive brochure today.

FORNEY'S, INC. MANUFACTURERS OF SPECIAL MACHINERY SINCE 1916
203 Elm St. New Castle, Pa.

Harvey Black Elected to Head New York State Concrete Masonry Assn.

At the second annual meeting of the New York State Concrete Masonry Association, Inc., held at Syracuse, Harvey H. Black, Domine Builders Supply Company, Inc., Rochester, was elected president. Other officers chosen were as follows: George Kogel, The Cincrete Corporation, Long Island City, vice-president; Grant N. Reinhold, Anchor Concrete Products, Inc., Buffalo, secretary; and John D. Daly, Auburn Cement Products Company, Inc., Auburn, treasurer.

William Markert, director of promotion for the National Concrete Masonry Association, Chicago, presented a report on the promotional program developed by N.C.M.A.

A guest speaker was Ira F. Honoman, executive secretary of the Eastern Concrete Products Association, Lancaster, Pa., who described the activities of his organization. Reports were presented by Alden C. McGuire, Comac Builders Supply Corporation, Rochester; Mr. Black, Mr. Daly, and Mr. Reinhold.

● Officers of the New York State Concrete Masonry Association, Inc., recently elected at the second annual meeting in Syracuse (left to right): Grant N. Reinhold, Anchor Concrete Products, Inc., Buffalo, re-elected secretary; Harvey H. Black, Domine Builders Supply Co., Inc., Rochester, president; John D. Daly, Auburn Cement Products Co., Inc., Auburn, re-elected treasurer; and Robert Abbey, Abbey & Co., Buffalo, executive secretary. Not present for the picture was George Kogel, The Cincrete Corporation, Long Island City, vice-president.

Elected to the board of directors, in addition to the officers, were the following: Henry C. Quaritius Jr., Nailable Cinder Block Corporation, Brooklyn; William C. Homer, Barnes & Cone, Inc., Syracuse; and Arnold Cogswell, Standard Block Company, Inc., Troy. Frederick W. Reinhold, Anchor Concrete Products, Inc., Buffalo, was re-elected a director at large. Garson Dinaburg, also remains on the board.

Newly organized by a group of local businessmen, the Pryor Concrete Company, Pryor, Okla., produces ready-mix, concrete coloring, and handles aggregates. Equipment includes Heltzel and Butler batching units. W. R. Potts is plant manager and operator.

R/Y Ready Mix

By Harry F. Thomson

Railroad Chose Conventional Cement Content

EARLY in the 1930's the growing confidence of structural designers and construction men that carefully controlled concrete would develop reliable strengths led to an interest in specifying the desired quality of concrete by strength instead of arbitrary proportions of cement, sand and aggregates. In response to this trend the Portland Cement Association issued a recommendation that when strength was specified, the mix design should point to an average strength of 28 days of at least 10 percent higher; *i.e.*, a mix intended to develop 2,750 p.s.i. to meet a 2,500 p.s.i. specification.

Shortly after this recommendation was published, the engineering department of a progressive Midwestern railroad issued the specification for an important structure, the concrete to be "placeable" and to develop 2,750 p.s.i. in 28 days; but no slump, no proportions, and no cement content were named. Preliminary test batches with the materials proposed for use were required, to determine the necessary cement and water contents. These batches were hand-mixed in a mortar box; cement contents for the batches were equivalent to a range from 4 to 6½ sacks per yard by ½ sack steps; water for each batch was started at a known low quantity and was increased by measured increments during the mixing until the inspector approved the consistency as 4- to 5-in. slump. Thus the water-cement ratio was known for each cement content at the condition of approved workability (slump).

A representative of the ready-mix company which had the order for the concrete predicted that the 2,750 p.s.i. requirement could be met with not over 4¾ sacks of cement per cu. yd. The 28-day strengths of the test batches indicated that as little as 4.6 sacks would be adequate.

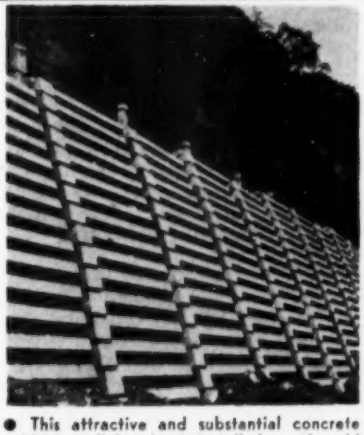
When the engineering vice-president of the railroad received this report, he remarked that he had never heard of using so little cement, and added, "We are furnishing the cement for this job. Tell them to use 6 sacks per yard." The ready-mix was furnished accordingly, with the result that the average 28-day strength of concrete in the building was 4,300 p.s.i.; and other cylinders at the age of three years averaged 5,500 p.s.i., against a specification of 2,500 p.s.i. The railroad did not quibble about the extra cement used in producing a concrete of better quality than anticipated in the structural design, and expressed satisfaction at receiving an exceptionally good reinforced concrete job.

Fred F. Van Atta Appointed To A.S.T.M. Headquarters Post

The American Society for Testing Materials has announced the appointment of Fred F. Van Atta, as special assistant, on the headquarters staff. Mr. Van Atta was formerly manager, Building Division, Carolinas Branch, Associated General Contractors, and before that acting secretary-treasurer of the American Concrete Institute and editor of the A.C.I. *Journal*.

In the immediate future, Mr. Van Atta will concentrate his work on co-ordinating and extending the A.S.T.M. developmental and promotional activities, but special assignments will be made from time to time. In this work he is reporting directly to R. J. Painter, A.S.T.M. executive secretary.

The firm of Fred W. Hedberg & Sons, Minneapolis, Minn., has been announced as successor to the Hedberg-Freidheim Company, which was dissolved recently. According to the announcement made by the new firm, it will offer concrete block, brick, ready-mixed concrete, and washed sand and gravel. The main plant is located at Edina, Minn., and another operation is at Hopkins, Minn.



● This attractive and substantial concrete cribbing wall has been installed on the old "W" road that leads to the summit of Signal Mountain, Tenn. Universal Concrete Pipe Company's Nashville plant supplied the cribbing, which replaces a stone masonry wall that collapsed and blocked the road. The new wall was designed by the Schmidt Engineering Company and built by Brown Bros. Construction Company, both of Chattanooga, Tenn. Walter Brooks, manager of Hamilton County, supervised the project.

Self Employed Notified Of Proper Tax Procedure In Social Security Payment

Most persons who are self employed are required to report their income for Social Security purposes at the time they file their 1953 federal income tax return. In most cases the 1953 return will be due by March 15, 1954. 1953 is the third year those who operate their own trade or business have been covered under Old-Age and Survivors Insurance, more commonly known as Social Security.

The self employed will pay their 1953 social security tax at the current rate of 2¼ percent of the net income from their trades or business. Any income in excess of $3600 will not be considered for Social Security purposes, and no tax will be paid on any such income, income under $400 cannot be credited under the system, and no report of such income need be filed for Old-Age and Survivors Insurance purposes. The amount of social security tax payable will consequently vary between $9 and $81, depending upon the individual's net earnings.

Schedule C of income tax Form 1040 should be used for the purpose of reporting one's income for Old-Age and Survivors Insurance purposes. On this schedule the self-employed individual will show his self-employment income, the amount of Social Security tax due, the nature of his business, his Social Security account number, and his name and address. The Treasury Department will forward this information to the Social Security Administration in order that the individual's Social Security account may be properly credited.

Individuals operating their own business, either as partnerships or as sole proprietorships, are, in most cases, covered under Old-Age and Survivors Insurance. Specifically excluded are lawyers, architects, physicians and other medical practitioners, professional engineers, farmers, undertakers, and most accountants. Clergymen are also excluded from Social Security coverage.

It should be emphasized that there is *no optional coverage* under the Old-Age and Survivors Insurance system. Coverage is mandatory for all self-employed persons except those in occupations that are specifically excluded by the law. Nor may a person who is not self employed secure coverage merely by paying the Social Security tax; earnings from a trade or business are a prerequisite to reporting.

A person newly established in business need not apply for a new Social Security number if he already has one; only one social security account number should be used by any one person, even though he may alternate between working for others and working for himself. Using one number only will assure an individual of receiving full credit for all work performed under the Social Security system.

On October 22 the Pennsylvania Concrete Pipe Association met at the Penn Harris Hotel in Harrisburg. The main topic centered about local promotional efforts, and it was decided to request help from the American Concrete Pipe Association in the matter of solving problems of state associations.

If you are paying $1,000 income tax this year, your contribution will run the government about 1/3 of a second.

"We buy her—so now everybody's ordering in 1-yard loads!"

Smart Producers Are Playing New Angles in Advertising

Concrete block manufacturers are becoming more and more convinced of the value of printer's ink. In Salt Lake City the Buehner Block Company, in co-operation with local contractors, are publicizing the fact that "Buehner block garages can be built complete, ready for use, for as little as $19.81 per month, with no down payment." The company also distributes special literature carrying designs for garages.

Capitalizing on the current "do-it-yourself" rage, the Concrete Products Company of Tucson, Ariz., has prepared a six-page folder containing four designs and patterns for building a terrace or patio with units made in its plant. The folder reportedly has paid off by creating a local demand for the concrete blocks and stepping stones.

Horace Bush, who heads the Multiplex Concrete Company at East Orange, N. J., reports that his firm is sending out post-card size color pictures of its plant, built of "Ranch Stone", its own product.

Eastern Products Assn. Elects Officers, Directors At Second Annual Meeting

The following officers and directors were elected for the coming year at the annual meeting of Eastern Concrete Products Association, held at the Hotel Hershey, Hershey, Pa., on November 18, 1953:

President: Harry H. Longenecker, Building Units, Inc., Primos, Pa.; first vice-president: T. K. Nitterhouse, Nitterhouse Concrete Products, Chambersburg, Pa.; Second vice-president: John T. Fizzano, Fizzano Brothers, Inc., Crum Lynne, Pa.; secretary-treasurer: H. Melvin Binkley, Binkley & Ober, E. Petersburg, Pa.

In addition, the following were elected to the board of directors: Charles E. Alwine, Alwine Brick Company, New Oxford, Pa.; J. G. Lewis, Scranton Building Block Co., Scranton, Pa.; G. K. Bistline, Carlisle Cement Products Co., Carlisle, Pa.; Pack F. Ridgley, W. R. Ridgley & Company, Wyoming, Pa.; Daniel A. Matassino, Continental Block Co., Wilmington, Del.

Eastern Concrete Products Association is a trade association of manufacturers of concrete blocks in Pennsylvania and the Delmarva Peninsula.

Greater attention to sales promotion and salesmanship to meet changing conditions, improved quality, the admonition to "know your costs," promotion of greater use of blocks in exposed work, uniform standards of delivery practices and a closer relationship with National Concrete Masonry Association were the principal subjects of discussion at the meeting.

Officers reported a steady growth for the association, which began with six men who met at dinner a year ago at the invitation of Harry H. Longenecker and Thomas F. Bausman. Now there is an active association of 45 members in eastern Pennsylvania and the Delmarva Peninsula.

Too Many Orders Delay Plans For Needed Plant Addition

Precision-made block is the specialty of Blox, Inc., a new plant in Williston, N. D., although the firm reportedly will soon expand for the production of precast steps and beams.

So great has been the demand for the units, that an unusual situation has developed to embarrass the operators. They have not been able to enlarge their plant because, according to C. T. Rudberg, president manager, "Every block we've been able to make has gone to meet the demand for building material." As soon as production can "catch up" on demand, a new building will be constructed of the firm's own units to house a precast-beam plant and an office.

Lightweight Aggregate Given New Application By Pennsylvania Artist

In the offices of William F. Atkins, sales manager for Lelite at the Lehigh Materials Company, Lansford, Pa., a tall, graceful statuette of Saint Barbara, patron saint of miners, may be seen. Behind that statuette lies a story which represents a unique "first"—both in the world of art and in the building industry.

When Karl Wallen, well-known sculptor from Hazleton, Pa., visited the Lelite plant recently, he inspected the finished stockpile of lightweight building aggregate with considerable interest. He picked the material up in his hand and let it sift through his fingers.

Later he returned to pick up a small quantity of Lelite. He conducted tests and mixed batches of this unfamiliar new material, which he thought of as a possible new medium for sculpturing.

When the Lehigh Art Alliance opened its doors to an eager public in October for the initial showing of several hundred paintings and other forms of art media which comprised the 1953 "Portrait of Industry" project of the Alliance, one of the main conversation pieces at the Allentown, Pa., exhibit was a statuette of Saint Barbara.

Lelite, an expanded shale produced in the coal country where Mr. Wallen works and lives, had been transformed by his talented, sensitive fingers from a rough, hard substance into the figure which was to give pleasure and win the admiration of an estimated 20,000 visitors at the art show.

In his own way, this talented artist did what architects, engineers and builders of America are doing every day of the year—he applied ingenuity and imagination to his assignment. Result—the first known art creation made of lightweight aggregate.

John Paul Jones has been made sanitation engineer for the Lefler Concrete Block Company, Charlotte, N. C. He will be in charge of the installation of all sewage systems for suburban and country homes, and will supervise those installed by Lefler in schools, churches, and industrial plants.

CANADIAN NEWS LETTER

PRECAST wall panels and concrete pillars and beams were used to speed up one of the fastest school-building jobs ever done in Canada when five classrooms were enclosed in eight days at the Langstaff Public School, Toronto.

The square foot price, according to W. E. Barnett, architect, of the firm of Barnett and Rieder, was well below that of many other new schools in the province of Ontario.

The prestressed concrete came from the Richvale plant of Murray Associates, Toronto manufacturers. Pillars of prestressed concrete were set in place to form outer walls, and beams of prestressed concrete wire strung across them. Pillars and beams were joined with steel embedded in them.

Flexicore slabs, 8 in. thick and 16 in. wide, were placed from outside to corridor walls by means of a steel erector's crane.

Precast sandwich panels were set in the spandrel spaces between columns, and sills attached later. An inch of insulation and a pitch-and-gravel roof went on over the Flexicore ceiling.

The general contractor feels he can reduce his bid on buildings using precast by as much as 6 percent in the future, now that he is aware of the savings that can be effected.

THE country's biggest cement producer, Canada Cement Company, plans to double the the capacity of its plant at Fort Whyte, near Winnipeg. The increased capacity will be considerably greater than present demand would indicate as immediately necessary, but it is hoped that as population increases in Manitoba and the surrounding district, the output will eventually be absorbed.

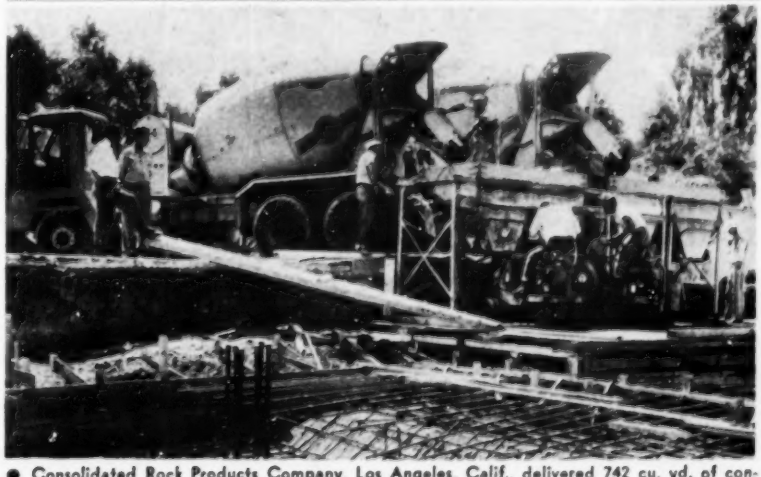
The expansion program, to cost $10,000,000, will double the present productive capacity, which is 1,600,000 bbl. per year. It won't be completed for about a year and a half, but additional cement will be available next year. It is expected that it will help ease the shortage of cement in Manitoba, which has been chronic since the war ended. The present plant will continue to produce while the expansion is underway.

A NEW Thermocrete and concrete products plant near Fredericton, New Brunswick, reflects the building boom that has affected the Maritimes city after the announcement that a giant new Canadian Army training camp, Camp Gagetown, will be built not far from the city. The $35,000,000 camp will mean the building of 1,400 housing units in Fredericton. Negotiations are now under way between the city and the Federal Government for the building of the units.

The new plant, built with the anticipation of sharing in the boom, is an addition to the plant of R. E. Shaw, Limited, whose headquarters are in Halifax, Nova Scotia. It will cover 3,000 sq. ft., and will be producing, it is estimated, in July, 1954. Floors, roof slabs, and precast concrete slabs will be turned out. The plant itself will be built of foamed slag from the Dominion Steel and Coal Company's plant in Sydney, Nova Scotia.

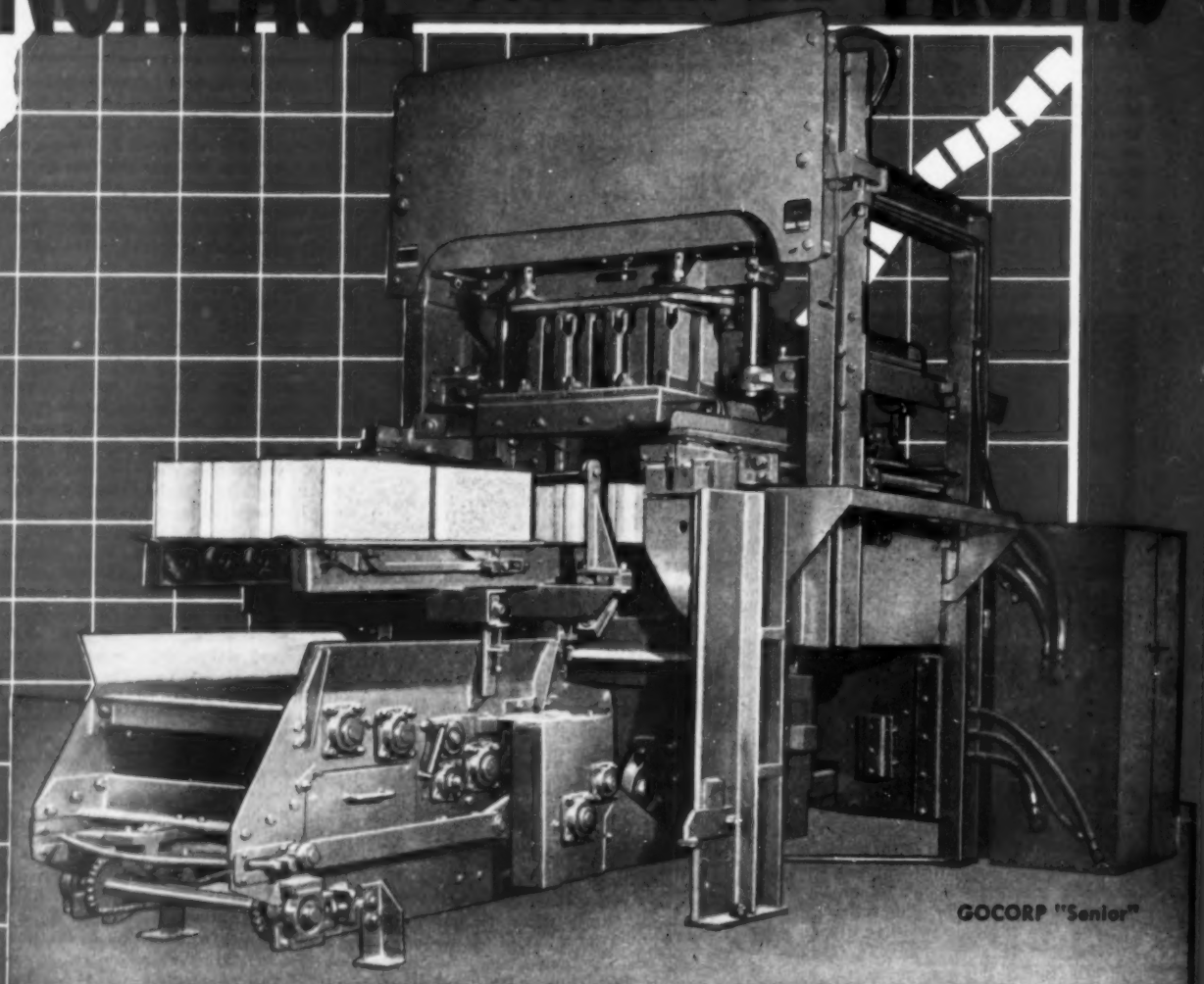
A BETTER BUILDING BULLETIN on concrete, one of a series, has been released by the Division of Building Research of Canada's National Research Council, a Federal Government agency. It covers materials and mixing, placing, and curing of concrete, with special emphasis on Canadian needs and conditions.

This booklet, prepared by E. G. Swenson, a member of the staff of the Division for Building Research, is designed to help the layman who knows little of concrete or its properties, to do his own small jobs.



● Consolidated Rock Products Company, Los Angeles, Calif., delivered 742 cu. yd. of concrete during an eight-hour shift with eight Challenge 6½-cu. yd. truck mixers mounted on Cook Bros. "M-310" trucks. The trucks were driven through city traffic 2.4 miles between the batch plant and the pouring site. The job is a three-level parking structure. T-S Construction Engineers, Inc., are the contractor.

INCREASE *YOUR YEAR END* PROFITS



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Because GOCORP Plain Pallet Machines (The King—4 at a time or the Senior—3 at a time, illustrated)—
mean ✓ quality product that keeps you ne
customers and repeat orders ✓ quantity production for lower *unit* production costs ✓ reduced maintenance and uninterrupted production allowing you to keep the profits you've made.

AND with a GOCORP there's no fear of obsolescence.

For complete information on plain pallet machines, batch mixers (12 to 75 cubic foot capacity), pipe and tile machines, or junior cored pallet block machines write or phone today.

HERE'S HOW GOCORP DOES IT—

- **Direct Feed** from main supply hopper to mold (no old fashioned feed drawer) plus intense vertical vibration (pallet clamped to mold) assures a *uniformly* dense unit.
- **Sequence Operation** for easy adjustment and greater production. Under Machine Pallet Return—saves space and reduces labor costs with one man operation.
- **Hydraulic Drive**—Smooth trouble-free performance—reduces maintenance. GOCORP'S Johnny-on-the-spot factory trained men for help when you need it.
- **Advanced Design** gives you "Tomorrow's machine today."

GOCORP
ADRIAN-MICH.

403 Grace Street Adrian, Michigan

Help! Help!

A get-together department for those who have problems or queries concerning the concrete industries and those who (we hope) have the answers. Please address all communications to The Concrete Manufacturer, 431 South Dearborn Street, Chicago 5, Ill.

A number of our readers have asked us to expand this small (and frankly somewhat experimental) department enough to permit publication of the solutions suggested for some of the more general problems posed here.

Colored Aggregates Our several inquiries concerning aggregates of various colors have drawn responses from the following concerns: Whitehead Brothers Co., 324 West 23rd St., New York 11, N. Y., who can supply a dark gray sand in several grades; Sparkle-Crete Co., 5849 W. Chicago Ave., Chicago 5, Ill., who can supply a black sand; Lehigh Materials Co., Lansford, Pa., who manufacture a sand-size aggregate which is blue-gray in color; Colonna and Co. of Colorado, Inc., Canon City, Colo., producers of marble chips ranging from the size of rice to about ¾-in. material, and in shades of color including cream, green, blue, pink, and black; and The Airox Co., 307 West Eighth St., Los Angeles 14, Calif., producers of lightweight, buff-colored granules in several gradations.

Volume Computer Mr. E. E. Osborn of The Clinton Construction Co., Wilmington, Ohio, advises the reader who is looking for a give-away plastic concrete volume computer to get in touch with Lockhart Rule Co., 721½ Chestnut St., Louis 1, Mo.

Mortar Tool The Kakest Co., Curwensville, Pa., manufactures a low-cost "mortar plane" which is said to lay a smooth, uniform ribbon of mortar for concrete masonry wall construction.

Mold Coating Mr. J. M. Connors, Victory Brick and Block Co., Gibbsboro, N. J., writes to say that the best coating for wooden molds is a product called Vinyl Floor Enamel, manufactured by Ben Foster, Girard Ave., Philadelphia 31, Pa.

Another suggested solution for this problem comes from Miss Elizabeth McCloskey, vice-president of Seal Lock Burial Vault, Inc., Forest Hills, N.Y., who says her company has obtained good results with a product called "Technicote", marketed by L. J. Kissling & Son, P. O. Box 21, Long Island City, N.Y.

Still another reader writes that good results may be obtained with an A. C. Horn Company product called Formfilm, which facilitates stripping and effects a considerable reduction in the cost of rubbing concrete castings. The manufacturer's address is Long Island City, 1, N. Y. The product is not recommended for use on old forms which have been treated with other products.

Concrete Posts Our request for the names of manufacturers of forms for fence posts has met with only a tepid response, but we can now add the following names to the list: Binghamton Metal Forms, Inc., Binghamton, N. Y., and PreCaster, Inc., 5217 Beech St., Cincinnati 17, Ohio.

Poles & Counters Under the heading of new business we have a request from a block producer for a mechanical counting device to be used on the skip loader which feeds his block machine, and another from a concern on the West Coast which is seeking quotations on machinery for the manufacture of concrete poles, ranging from 22 to 40 ft. in length, which are to be used for carrying power lines.

Concrete Solvent An overseas reader wants to know about two solutions which are unfamiliar to us. One is for application to the interior surfaces of mixers to facilitate the removal of adhered concrete, and the other is applied over adhered concrete to dissolve it. Our correspondent says that he understands these materials are used in the United States in connection with the maintenance of transit concrete mixers, and he would like detailed information.

Slide Rule From time to time we get a flurry of inquiries for a source of supply of concrete slide rules. We assume that what is desired is a logarithmic slide rule that is especially adapted to the computations which apply to reinforced-concrete design. So far we haven't located a rule of this type, and we would appreciate hearing from any of our readers who may have information on the subject.

Overweight Concrete Useful For Radiation Protection

According to a recent N.R.M.C.A. release, experiments and research conducted in the production of concrete purposely made heavy—as for ballast and counterweights, or for protection against atomic radiation—have pointed to significant conclusions.

The report cites tests made at the University of Washington under the sponsorship of the General Electric Company in which the structural properties of heavy concretes containing steel punchings, limonite, or magnetite as coarse aggregate were compared with ordinary concrete containing sand and gravel.

It was stated that because of greater water demand of the heavy-aggregate concrete, strengths were lower than for sand-and-gravel concrete by 32 to 37 percent in compression and by 8 to 36 percent in flexure. Volume changes were somewhat higher for the heavy concrete, except where magnetite aggregate was used, when unit elongation was reduced by half. Since the concrete was to be used primarily for radiation shielding, the demonstrated properties were considered satisfactory.

Watch Yourself, Arthur! Don't Smile When You Call Fly Ash Soot—Tsk! Tsk!

Fly ash received some fairly expensive nationwide publicity not long ago as the result of alert action on the part of J. D. Mollendorf, vice-president of the Chicago Fly Ash Company. Noting a too-casual reference to the material on Arthur Godfrey's Lipton Tea program, Mr. Mollendorf sent the following letter which Mr. G. dutifully read aloud to his audience of 17 billion, more or less:

November 24, 1953

Mr. Arthur Godfrey
Columbia Broadcasting System
485 Madison Avenue
New York 22, New York

Dear Mr. Godfrey:

I didn't like your tone of voice when you referred to fly ash last night. I'm not mad, but do you know that fly ash saved millions of dollars for the tax payer at Hungry Horse Dam, located near Hog Heaven, Mont.? There were over 250 million pounds of fly ash shipped to the dam site and used in their concrete mix. Fly ash makes better concrete. Lipton has not used that much chicken in his chicken noodle soup since he started making it.

Even the ancient Greeks and Romans used volcanic ash (very similar to fly ash) for structures which still stand after more than 2,000 years. I could tell you lots more about fly ash. I think it is exciting and thrilling to find such wonderful uses for a by-product you so scornfully referred to as "soot." You'd be excited and thrilled, too, if you could find a good use for your used tea bags. . . .

Cordially yours,
CHICAGO FLY ASH COMPANY
J. D. Mollendorf
Vice-president

Sensing, Ditchy, Downs To Address Mason Contractors

Thurman Sensing, political and economic analyst and executive vice-president, Southern States Industrial Council, will be one of the main speakers at the 1954 convention and show of the Mason Contractors Association of America, according to an announcement issued by C. O. Henriksen, Chicago, chairman of the convention committee. The M.C.A.A. combined convention and show will be held January 24-27, 1954, at the Sherman Hotel, Chicago.

Other featured speakers at the convention will be Clair Ditchy, president, American Institute of Architects, and James C. Downs Jr., president of the Real Estate Research Corporation.

Advance registrations for the 1954 convention and show may be made by writing the Mason Contractors Association of America, 208 South La Salle Street, Chicago 4, Ill.

Among the many recently established ready-mixed concrete plants reported throughout the country is the Cen-Tex Ready-Mix Concrete Company in Waco, Tex. Monte E. Owea is in charge as local manager. This firm is successor to the GDA Ready-Mix Concrete Company.

A Special Editorial for Block Makers Who Are Not Members of The Nat'l. Concrete Masonry Ass'n.

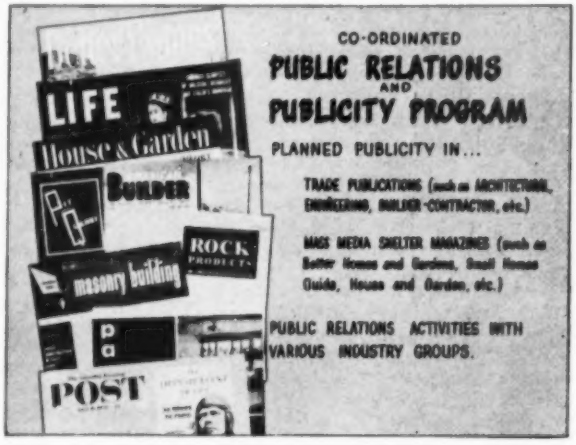
IN THE adjoining columns we have reproduced some illustrations from a booklet just released by the National Concrete Masonry Association, outlining that organization's expanded program of promotion and technical service for the benefit of its members. We are satisfied in our own minds that the program is an excellent one, and that it merits and will receive the enthusiastic endorsement and support of an overwhelming majority of N.C.M.A. members.

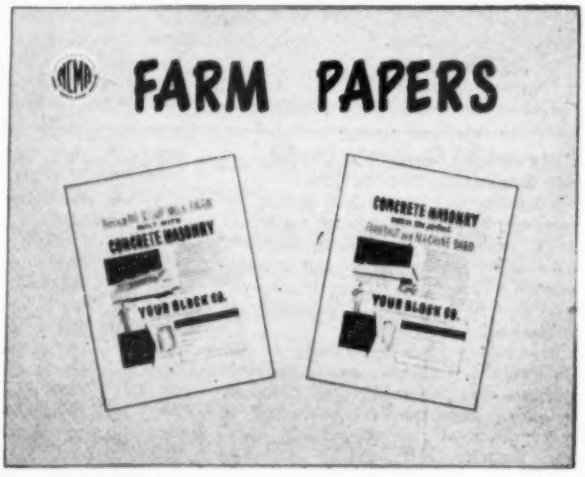
THE readers to whom this message is particularly addressed are the block manufacturers who are *not* members of N.C.M.A., and who are consequently not in a position to support the organization's challenging entry into the field of nationwide promotion. Nobody *has* to belong to an association, but it strikes us as simply a matter of good business to make periodically a fair re-appraisal of the pros and cons of participation.

WHILE we have always been of the opinion that it was good business for any block producer, regardless of size, geographical location, or other peculiarities of the market served, to maintain a membership in N.C.M.A., we believe many non-members have been entirely sincere in their belief that the association would not render any service to them personally which would be commensurate with the dues they would be required to pay in. If the premise were true, this would be a valid objection, for no association deserves support as a matter of inherent right; it must earn support in precisely the way that any business must win enough customers to pay its expenses and make a profit.

WE believe implicitly that membership in N.C.M.A. has always been a gilt-edged bargain that no really smart businessman would dream of passing up, but we have felt that its past efforts in the field of sales promotion and market development have left something to be desired. The expanded program of promotion outlined on these pages is an effective, courageous answer to this criticism, and we believe it deserves and should promptly receive a sweeping vote of confidence from the entire block industry.

THERE is only one way we know of for non-members to cast such votes — by promptly joining the association and participating in its activities. By taking such action the success of the present program can be guaranteed and the means provided for further expansion of effective promotional work in the years ahead. A strong influx of new members would now constitute a resounding vote of confidence in the future of the block industry.





INFLUENCE
ARCHITECTS & ENGINEERS
THROUGH PUBLICATIONS SUCH AS

How-to-do-it sheets

TO SHOW "BUILD IT YOURSELF" ADDICTS HOW TO DO IT WITH BLOCK. GIVING...

STEP BY STEP INSTRUCTION IN PICTURE AND CAPTION STYLE

BILL OF MATERIALS

FACTS ABOUT
CONCRETE MASONRY
FOR THE
ARCHITECT and ENGINEER

To be used with teaching supplement in architectural and engineering schools.

REVISED, UP TO DATE EDITION — A NEW AUTHORITATIVE HAND BOOK TAILORED TO REGIONAL VARIATIONS IN DESIGNING AND BUILDING PRACTICES

TO REACH
"MASS TRANSPORTATION" RIDERS in your COMMUNITY

CARDS FURNISHED TO MEMBERS AT COST.

Car Cards (inside buses, Trolleys etc.) and traveling displays.....
(SIDE OF BUSES)

GENERAL NEWSPAPER MATS
TIEING IN WITH NATIONAL TRADE PAPER ADVERTISING

Educational Color and Sound MOTION PICTURE

Tell C/M story to local groups:

ARCHITECTS, BUILDERS, MASONS.
CLUBS AND ORGANIZATIONS.
COLLEGES AND UNIVERSITIES.
LENDING AGENCIES.

DIRECT MAIL and FOLLOW-UP TOOLS

Sales Letters
(1) SAMPLE "STYLE" LETTERS YOU CAN ADAPT AND (2) ILLUSTRATED SALES LETTERS IMPRINTED AT COST ON YOUR LETTERHEAD.

Reply Cards

Follow-up cards

Folder on
"HOW TO GET THE MOST FROM INQUIRIES" AND DIRECT MAIL LEADS.

BILLBOARDS and Sign Boards

TO REACH DRIVERS ON THE HEAVY TRAFFIC APPROACHES TO YOUR CITY

NCMA WILL SUPPLY PRINTED PAPER FOR BILLBOARDS AT COST

1953 Marked by Continued High Levels of Output in the Block Ready-Mix and Pipe Industries

By WILLIAM M. AVERY

Soft spots in sales picture indicate shift to buyer's market in progress

ALL available evidence, including the returns from more than a thousand questionnaires which this publication mailed to its readers in the closing months of 1953, indicates that the three major branches of the concrete industries have just completed another bumper year. Production information for producers located in all sections of the country shows that the block industry scored a modest gain of about one percent to lift output to a new high of 1,800,000,000 8-in. equivalents. Similar data for the ready-mixed concrete industry indicate a total 1953 output of 58,000,000 cu. yd., or 6 percent more than the previous high established in 1952. Although no direct comparison of production figures is available for the concrete pipe industry, there are good indications that total output was no less than the 11,000,000-ton record established in 1952, and there are some reasons for believing that this vigorous industry may have experienced a 4 or 5 percent increase in production.

In the adjoining columns we have attempted to analyze the survey findings for each of the three industries concerned. The picture in general is a reassuring one for those who are willing to roll up their sleeves and go to work. For those who lack this capacity, and there are more than a few of them, we think the leveling off process may very well mark the end of a long, merry ride.

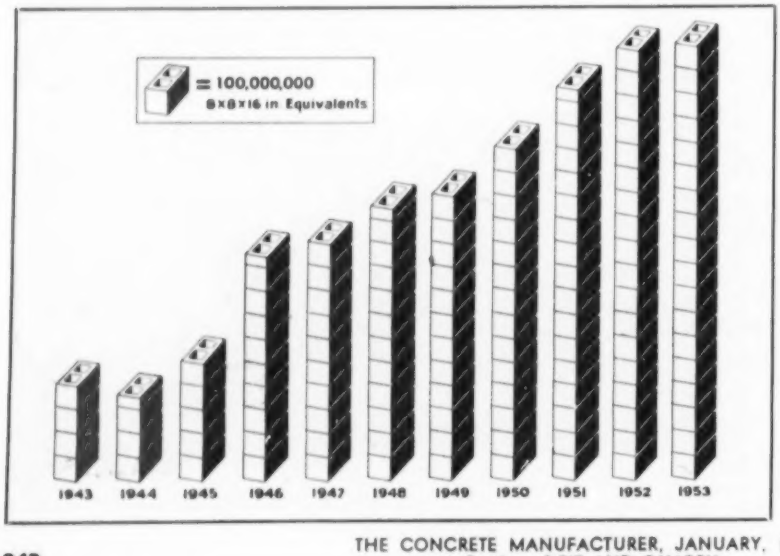
Concrete Masonry Units

another PO exclusive

DESPITE reports of a downward trend in the sale of concrete masonry units during the closing months of 1953, this publication's survey of production for the year shows virtually no change in total output from 1952's all-time record of 1,780,000,000 8-in. equivalents. Actually, the very small gains which the survey showed in all major sections of the country except the Midwest indicate that total output in 1953 approximated 1,800,000,000 units, for a gain of about one percent over 1952.

The estimated total production is projected from data concerning output, capacity, selling price and wages supplied by companies which represented 15½ percent of the industry's output in 1952. Returns were well distributed in all sections of the country except the far West, where the sample obtained was probably too small to permit valid conclusions. The scattered data obtained from western concerns indicated that total output may have dropped as much as 4 percent, compared with a drop of 2 percent in the Midwest, and gains of 2 and 3 percent respectively in the East and South.

There is some apparent discrepancy between the survey finding in respect to total 1953 output and the widespread talk in the industry of a sharp downward trend in sales. This can be accounted for in part, at least, on the basis that the first reversal of a long-sustained sellers' market was bound to occasion cries of anguish out of all proportion to the actual pain inflicted. Another influential factor is that the survey questionnaire asked for data on production only, and no attempt was made to determine what portion of the year's output went into increased inventories. There is little doubt that block inventories increased substantially during 1953, reflecting simultaneously the improved availability of cement and the slow-down in the sales picture. The meager data available on the subject indicate that total sales of block in 1953 ran 5 or 6 percent below the level for 1952.



Cement Supply The survey clearly indicated that cement supply was not a serious problem in any major block producing area last year. Less than 6 percent of our informants indicated any loss of production during the year because of lack of cement, and most of the distress showed up in eastern areas where shortages were mainly induced by strikes. In a similar survey conducted a year ago almost 30 percent

of the producers who replied reported that they had suffered loss of production due to cement shortages.

Even in areas affected by strikes, few plants suffered any major loss of production in 1953. The largest loss reported by any single plant amounted to only 300,000 units, and the average was closer to 100,000 units.

Lightweight Units The group of plants represented in our survey of 1953 production indicated that 54 percent of output consisted of lightweight masonry units. Although this proportion was identical with our findings of a year ago with respect to 1952 production, it actually represented a slight increase (from about 52 percent) for the group covered in the more recent survey. The apparent disagreement results from the fact that it is impossible, or at least impractical, to study the same plants each year.

On an area basis the 1953 proportion of lightweight units was greatest in the West (73 percent) and smallest in the South. Lightweight units accounted for 53 percent of production among midwestern firms which supplied data, and 59 percent among eastern firms.

Hourly Capacity Although the total number of machines remained virtually unchanged throughout the year for the plants covered by our survey, there was a 6 percent increase indicated in hourly capacity per plant—from 775 units per hour per plant on January 1 to 820 units per hour per plant on October 1. In the same period the indicated capacity per machine increased from 570 to 596 8-in. equivalents per hour. The reporting group showed an average of 1.35 machines per plant.

Block machines represented in the 1953 survey operated an average of 2,150 hours per machine for the entire year, a sharp enough drop from the figure of 2,310 hours per machine obtained a year ago to indicate a general curtailment of second shift operations.

Prices For the whole group of plants covered in this publication's 1953 survey there was virtually no change in selling price between January first and October first. The average price reported showed only a fraction of a cent increase—from about 19.7 cents at the beginning of the year to just under 19.8 cents nine months later. The average for the Midwestern portion of the sample dropped from 19.2 to 19.1 cents per 8-in. equivalent. The average for the South remained unchanged at 20.7 cents per unit, while gains of half a cent in both the East and the West sent averages in these localities to 18.6 and 24.8 cents respectively.

The 1953 survey findings with respect to prices in general checked very closely with similar data obtained a year ago. The only serious disparity showed up in the price data for western producers, this group having shown an average price of 22.4 cents in the earlier survey, compared with 24.3 cents per unit three months later in the more recent survey. It is believed that the inaccuracy is a direct result of the smallness of the sample obtained in this section of the country.

Wages Average hourly wages in the industry continued the steady climb which has been noted in every year since the war. The average for the entire sample, which represented over 280,000,000 equivalent units of production, increased from $1.31 per hour on January 1 to $1.38 per hour on October 1. The average wage showed an increase in all sections of the country—from $1.41 to $1.49 in the Midwest; from $1.35 to $1.42 in the East; from $0.98 to $1.00 in the South; and from $1.60 to $1.68 in the West.

Outlook Just over half of the survey group indicated that 1954 business would probably repeat the general pattern of 1953, and the remainder were about equally divided between those who anticipated slight increases and those who foresee modest declines.

Despite this conservative view of the future, almost 20 percent of the sample reported having definite plans to increase capacity in 1954. Over 40 percent of the small group of western producers indicated they would increase capacity, while the indication in the Midwest, East, and South was 20 percent, 19 percent, and 8 percent, in that sequence.

Canada With only a little over 20,000,000 units of production represented by Canadian manufacturers, there is reason to doubt the significance of some of the data supplied except insofar as broad trends may be apparent. The Canadian sample showed a 12 percent production increase in 1953 over 1952, and 22 percent of 1953 production was reported as having consisted of lightweight units. Well over half of the reporting companies were not in the block business a half dozen years ago.

For the Canadian group selling prices remained unchanged at just under 22 cents per unit from January 1 to October 1, while wages showed an increase from $1.28 to $1.34 per hour. Almost 40 percent of the group indicated that cement shortages had been responsible for lost production during the year, but even the total loss attributed to this cause was inconsequential.

The returns indicated there is a good deal more optimism north of the border. *All* of the Canadian producers who ventured a prediction on their 1954 business said they expected an increase, and a surprising 70 percent of the small sample reported plans for increasing capacity.

Ready-Mixed Concrete

PRODUCTION information sent to this publication by ready-mixed-concrete producers indicates that the industry's output in 1953 increased to a new record high of approximately 58,000,000 cu. yd. This figure represents a gain of almost 6 percent over the similarly-determined 55,000,000 cu. yd. production in 1952, maintaining the uninterrupted series of increases noted and recorded in these pages since the close of World War II.

Southern producers reported production gains which averaged almost 25 percent, compared with more modest showings of 3½ percent in the East and 5½ percent in the Midwest. The group of western producers who co-operated in the survey showed virtually no change in their total 1953 output as compared with 1952.

For the first time this year the questionnaires sent out by THE CONCRETE MANUFACTURER asked for information concerning type of operation; *i.e.* central mixing, transit mixing, or a combination of both. The group as a whole, representing almost 8,500,000 cu. yd. of production, in the year just closed, fell predominantly (72 percent) in the transit-mix category. Of the remainder, 22 percent reported central mix operations and 6 percent a combination of transit and central mixing. On a geographical basis the incidence of central mixing operations was as follows: Midwest 27 percent, East 21 percent, South 15 percent, and West 23 percent.

The surveyed group showed modest increases in size of fleet and average capacity of haulage units. For the group as a whole the average

number of haulage units increased from 14.4 trucks per plant of January 1, 1953, to 15.1 trucks per plant on October 1. In the same period total truck capacity increased from 58 to 63 cu. yd., while the average capacity of truck mixers increased from 4.02 to 4.13 cu. yd.

Number of trucks per plant ranged from just under 12 in the Midwest, where a somewhat disproportionately large share of the sample was concentrated, to just over 19 units per plant in the West. Reported truck sizes averaged 3.55 cu. yd. per unit in the Midwest, 4.00 cu. yd. in the South, 4.57 cu. yd. in the West, and 4.85 cu. yd. in the East.

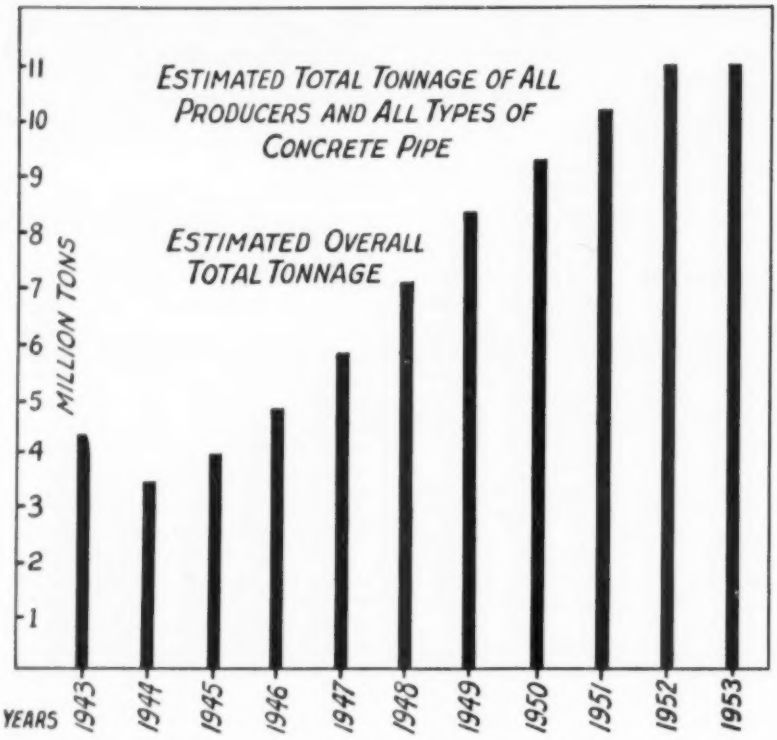
Average selling price of ready-mixed concrete, as reported by the group, increased from $12.24 per cu. yd. on January 1 to $12.52 per cu. yd. on October 1. Prices increased fairly uniformly in all sections of the country—from $12.10 to $12.40 per cu. yd. in the Midwest; from $12.18 to $12.56 in the East; from $12.70 to $12.94 in the South, and from $11.89 to $12.30 in the West.

THE CONCRETE MANUFACTURER'S survey of 1953 production in the ready-mixed concrete industry indicated, as did a similar study of the concrete masonry industry, that cement supply was not a serious problem for ready-mix firms during the year just closed. Less than 10 percent of our informants reported any loss of production due to this factor, while a year ago cement shortage was listed as an operating factor in over 35 percent of the returns received in a similar survey.

Whatever peace of mind ready-mixed-concrete producers gained as a result of the improved cement supply situation seems to have been cancelled by the wave of disastrous strikes which resulted in a sharp curtailment of activity in a number of metropolitan areas. Of the plants represented in the survey, one in four was affected in some measure by strikes during 1953. The total production loss attributed to this factor, however, amounted to only about 1½ percent of the group's total production for the year.

Based on an average 5-sack mix, the 48,000,000 cu. yd. of ready-mixed concrete produced in 1953 consumed around 60,000,000 bbl. of portland cement, an increase of about 3,000,000 bbl. over 1952. Since preliminary estimates indicate that shipments of cement in 1953 totaled close to 260,000,000 bbl., it would appear that the ready-mixed-concrete industry again, as in 1952, accounted for about 23 percent of total shipments.

The producers who co-operated in our survey of 1953 production take a rather sober view of their industry's outlook in the year ahead. Only a handful, at any rate, were willing to predict that 1954 will be marked by further substantial production gains. The majority who ventured an opinion either predicted a repeat of 1953 business or a small decline as the result of a downward trend in dollar volume of construction.



Concrete Pipe

FROM all indications, the concrete pipe industry in 1953 scored at least a repeat of the all-time high output of 11,000,000 tons produced in 1952. Indeed, when firm production statistics become available, it may be established that the industry's total output of all types and sizes of concrete pipe was increased by as much as four or five percent.

The projection of an accurate picture of production trends in the pipe industry last year is rendered more difficult than usual by the spotty character of the market in various sections of the country. It seems likely that sales were off somewhat in areas adjoining the Atlantic and Gulf coasts, but this trend (if it was a trend) was more than counterbalanced by an upsurge of business on the West Coast and in the Midwest.

Even if the industry as a whole did no more than maintain the record production levels attained in 1952, the year just ended was unmistakably a busy and a prosperous one. On the credit side of the ledger was the vastly improved cement supply situation. While cement shortages never harassed the pipe industry to the extent experienced by producers of block and ready-mixed concrete, the possibility in some areas had loomed like an ever-present cloud. Increased availability of cement, due to high production and some slackening in demand, made the material readily available in almost all sections of the country throughout 1953, and it seems safe to say that no serious shortage was experienced by any well established manufacturer of concrete pipe.

As the direct result of keener competition, both within the concrete pipe industry and with manufacturers of other materials, the quality of pipe produced in 1953 undoubtedly went up. Throughout the industry, at any rate, there was increased emphasis on problems related to quality. Plant improvement programs carried out during the year almost invariably included improved facilities for batching and curing, and this trend in turn offered assurance that responsible producers were determined to hold the competitive advantages which the superiority of their product had won for them.

It seems fairly certain that for the pipe industry, and probably for all branches of the concrete industries,

(*Continued on page* 269)

A Summary and Appraisal Of Economic and Technical Factors In High Pressure Steam Curing

By DALE COBB
President
Autoclave Building Products Assn.

This excellent paper on high-pressure steam curing was one of the features of the program presented by the Southeastern Division of the National Concrete Masonry Association at Charleston, S.C., several weeks ago. Because of the timeliness of the subject, we have obtained Mr. Cobb's permission to publish it in full.—The Editors.

QUALITY is that characteristic of a product which makes it outstanding among products of like type—causes it to be desired where a choice is involved. The topic of quality has been stressed in meetings for many years in connection with the development of concrete block, now better termed concrete masonry units. Producers who have kept abreast with developments, and who have put into practice the methods, procedures and equipment for the improvement of their products, have been among the more successful manufacturers.

Production quantities have increased from unit equivalents in thousands to millions with many an average producer. Sources and types of aggregates, cements, and machinery have increased proportionately. However, there is one phase of the manufacturing process which has been neglected. I say "neglected" because it has not been developed with the adequate interest and fervor to correlate this phase of the process with production of the product. The neglected phase of process in the concrete masonry industry has been the curing of the product.

By way of illustration, the industry might be compared to a fine, husky, growing lad who, because of his robust physique is allowed to grow considerably overweight for his age. Suddenly his parents realize that something must be abnormal about his growth. The concerned parents take the lad to a physician, whose diagnosis of his condition states that it is thyroid trouble. His thyroid glands are inactive, and the treatment recommended is intended to regulate this sensitive organ—an organ which reacts to treatment in such a delicate manner that regulating over- or under-stimulation by medicine is a slow and painstaking procedure, and all dependent upon the co-operation of the lad and his willingness to take the medicine prescribed and to control his diet.

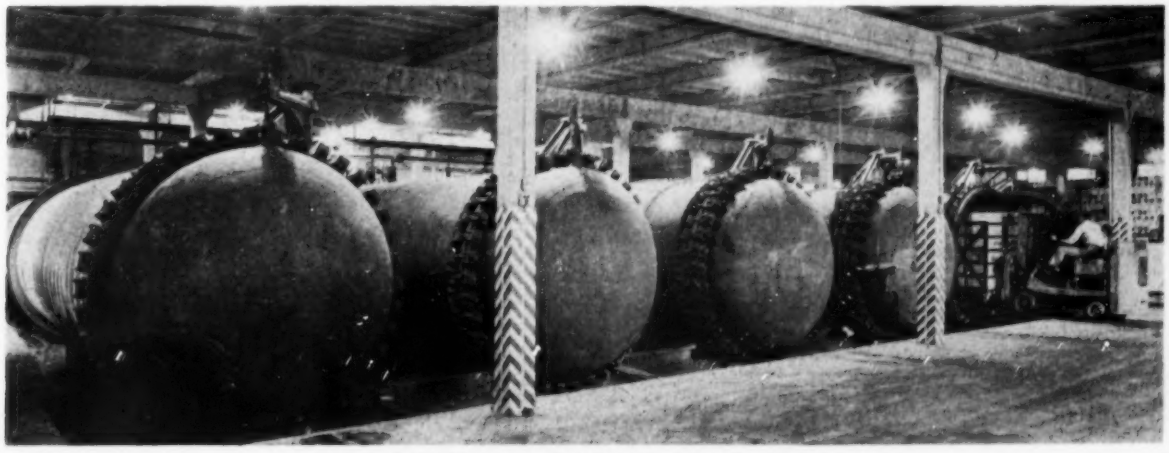
The behavior of cement in masonry products, while affording strength to the product of a growing industry, is in need of a treatment that will better stabilize its reactions as reflected in the finished product.

The industry for many years now has known the merits of product quality which high-pressure-steam curing builds into concrete masonry units. Numerous methods and procedures of steam curing have been employed in an effort to achieve a product with more quality merit, but interest seems to revert to the high-pressure-steam curing method.

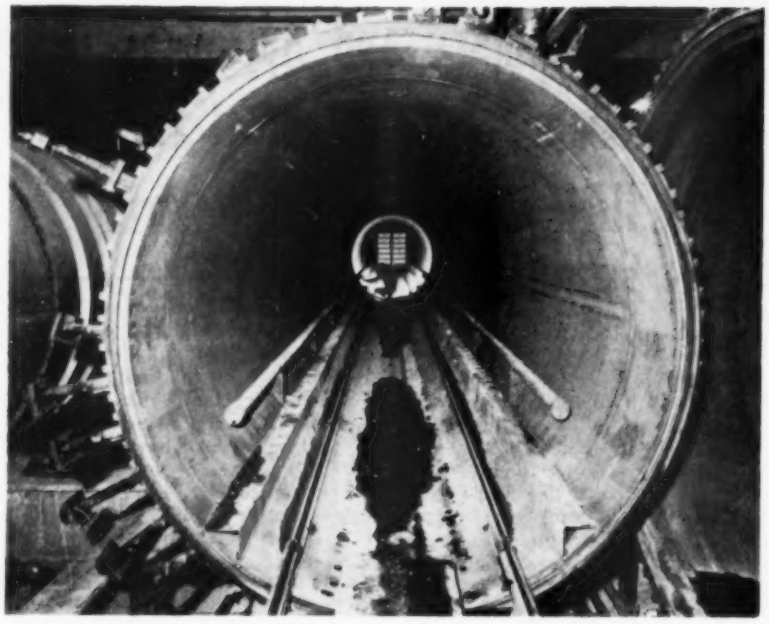
High-pressure-steam curing relates to a method of curing concrete or siliceous products within a pressure-tight cylinder in an atmosphere of saturated steam at a temperature of approximately 350 deg. F. It is the curing of the product in a closed vessel under live steam at a working pressure of 125 p.s.i. (or more) that differentiates the high-pressure-steam curing method from the conventional high-temperature system wherein live steam is simply introduced into a closed room or kiln.

"There is definitely a difference," according to Carl A. Menzel[1], "in concrete cured in high-pressure steam as compared to moist-cured concrete, in the extent to which primary chemical reactions between the cement and water are supplemented by secondary reactions between the calcium hydroxide, liberated during hydrolysis, and hydration of the cement and the siliceous particles of aggregate in the mix. While some reaction can take place even in moist-cured concrete between certain siliceous materials and the calcium hydroxide in the hardening paste, it requires long periods of moist curing; and the strengths developed are lower than those obtained with curing in high-pressure steam."

[1] Menzel, Carl A.: *Strength and Volume Change of Steam-Cured Portland Cement Mortar and Concrete* (1934 report).



● This battery of five autoclaves was installed several years ago at the plant of Harter Marblecrete Stone Company in Oklahoma City, Okla. These are believed to have been the first cylinders with an inside diameter of 8 ft. ever built for curing block. The units are 95 ft. 6 in. long.



● Interior view of one of the Harter Marblecrete autoclaves, showing the arrangement of rails and steam headers, and the angle iron ledges which support the block racks.

The high-pressure-steam curing method is by no means a method of recent development. The use of pressure vessels in the manufacture of masonry materials was applied commercially in 1880 in Europe when Dr. William Michaelis discovered and patented the process for making sand-lime brick. The brick industry there made rapid progress, and it was in 1901 that the process and equipment was introduced in the United States, and soon thereafter in Canada. At that time the recommended working pressure was a minimum of 120 p.s.i. for a period of 8 to 12 hours, evidence enough that process procedure had been well established for that type of masonry product.

In the growth of the sand-lime brick industry in the United States, of necessity pressure levels (or autoclaves, the laboratory term for such vessels) were an integral part of the process of manufacture. Noting the strong calcium-silicate binder created by the chemical reaction of sand and lime under high-pressure steam, the field of research was opened to the study of the effects of high-pressure-steam curing on portland cement and concrete, a subject acknowledged by research papers on it as early as 1910[2].

It was in 1930 that the Engineering and Research Laboratory personnel of the Portland Cement Association undertook the investigation studies of high-pressure-steam curing of concrete products, which resulted in the following data in published form:

1931—*Shrinkage Measurements of Concrete Block Masonry* by W. D. M. Allen (at that time manager of the Cement Products Bureau of Portland Cement Association, presently vice-president for promotion and secretary, P.C.A. at the A.C.I. convention, February 24-26, 1931.

1934—*Strength and Volume Change of Steam-Cured Portland Cement Mortar and Concrete* by Carl A. Menzel (at that time associate engineer, Research Laboratory, P.C.A.; presently concrete technical problems consultant, P.C.A. November-December, 1934, A.C.I. *Proceedings,* Vol. 31, p. 125.

1935—*Studies of High Pressure Steam Curing of Tamped Hollow Concrete Block* by Carl A. Menzel. September-October, 1935, A.C.I. *Proceedings,* Vol. 32, p. 51.

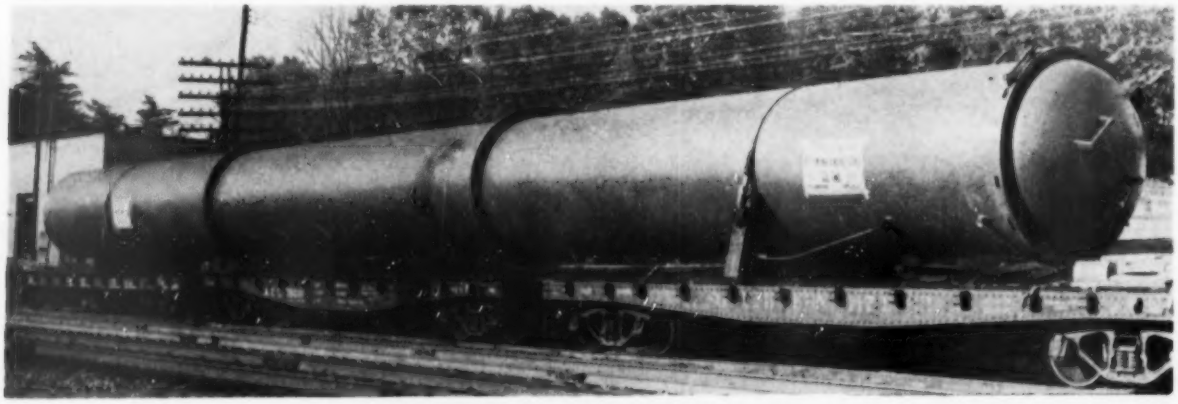
1936—*Studies of High-Pressure Steam Curing of Concrete Slabs and Beams* by Carl A. Menzel. May-June, 1936, A.C.I. *Proceedings,* Vol. 32, p. 125.

Mr. Menzel's research on high-pressure-steam curing of concrete products has been an outstanding contribution to the industry in this country.

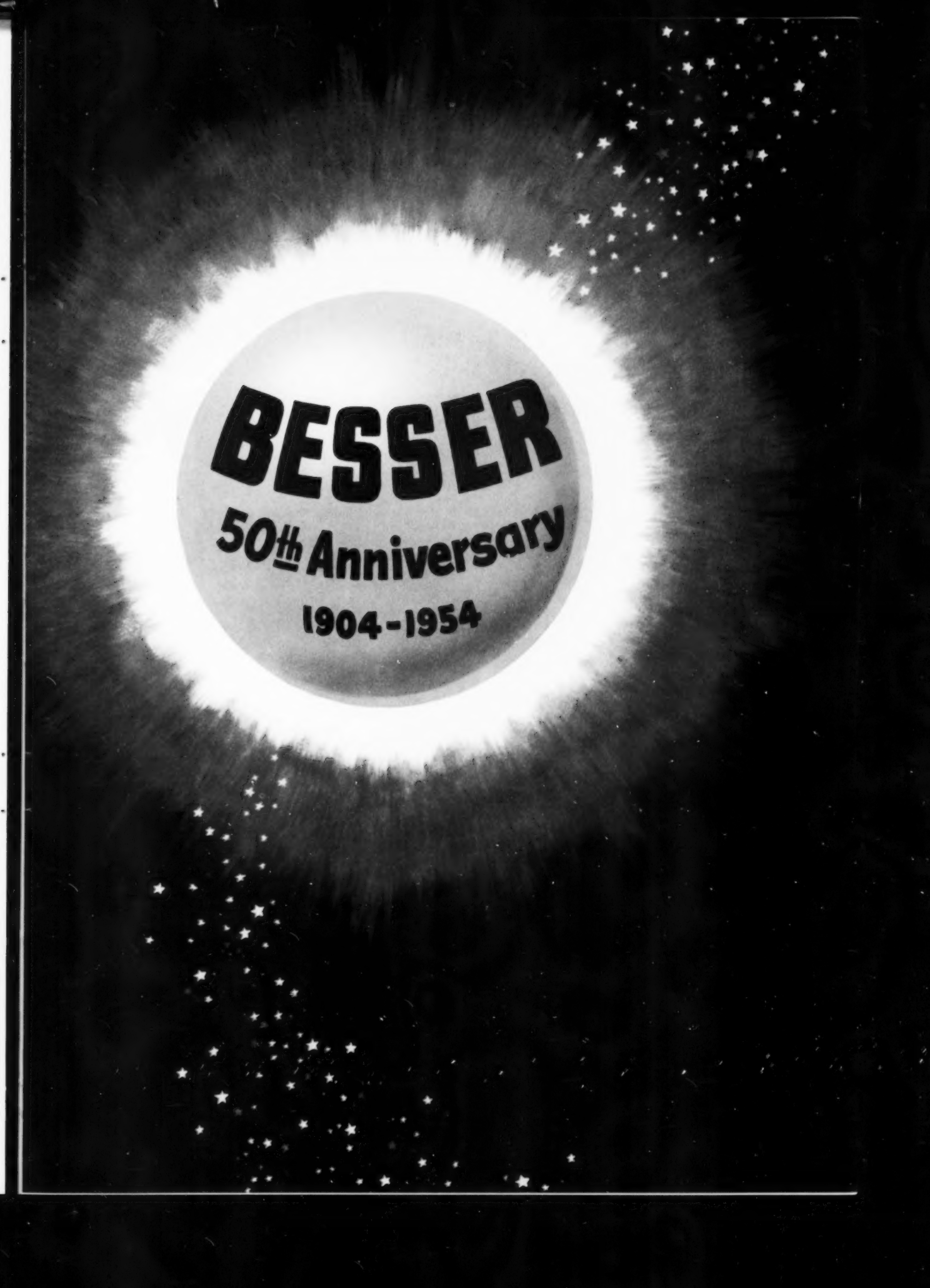
During the years of the above dated studies you will recall the "lean" business years experienced.

To meet purchaser demand for larger, labor-saving sized units, numerous brick plants equipped with autoclaves met this demand by supplementing their brick production with the manufacture of concrete masonry products. At that time it proved the economical step for them to take because they had the curing facilities. Their manufacture and high-pressure-steam curing of concrete products confirmed on a pro-

● This 113-ft. cylinder, which required three standard flat cars for shipment, is one of six units recently installed by the National Brick and Supply Company, Terra Cotta, D.C.



[2] Wig, R. J.: *The Effect of High-Pressure Steam on the Crushing Strength of Portland Cement.* Technical Paper BS 1 (1910-12) T5.


BESSER
50th Anniversary
1904-1954

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February 7-8-9-10 1954

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CONCRETE BLOCK MACHINERY

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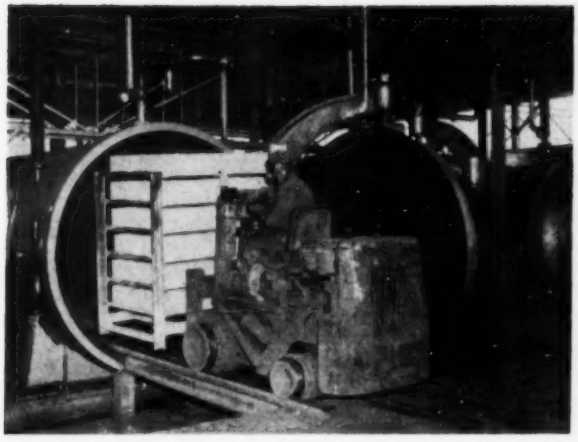
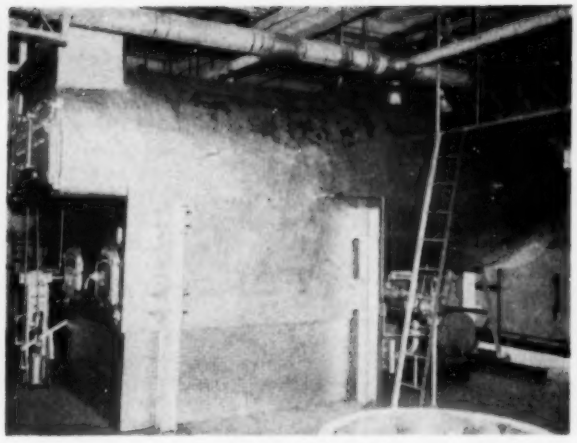
BESSER MANUFACTURING CO., Alpena, Michigan, U.S.A.

BESSER
50th Anniversary
1904-1954

A Half Century of Concrete Masonry Progress



● Lift trucks run right into the autoclaves by means of flanged rims attached to the regular wheels which engage rails extending the length of the cylinders.



● View of the 300-hp. gas-fired high-pressure boiler used by Harter Marblecrete.

duction basis the advantages related in the summary of research findings, which was further rewarded by architect, contractor and builder acceptance of high-pressure-steam cured products for these qualities.

These advantages, as outlined in a 1944 progress report by A.C.I. Committee 716 on high-pressure-steam curing, after a thorough study of the available information pertaining to high-pressure-steam curing, together with the practical results and experience of manufacturers employing this method of curing concrete products, were outlined in the following general conclusions:

1. Concrete masonry products can be cured by high-pressure-steam curing methods ready for use within 24 hours after molding.

2. High-pressure-steam curing is completed without substantial change in shape or size of masonry units.

3. High-pressure-steam cured units are substantially in a drier condition and lighter in color than moist-cured units, and give a clear ring when tested with a hammer.

4. Compressive strength of high-pressure-steam cured units at one day is at least equal to that of moist-cured units at 28 days.

5. High-early strength of high-pressure-steam cured units is permanent.

6. High-pressure-steam curing treatment tends to stabilize unsound materials that might otherwise result in popping or spalling in service.

7. High-pressure-steam curing develops increased resistance to sulphate action.

8. High-pressure-steam curing (especially in the presence of silica) practically eliminates leaching and efflorescence.

9. The shrinkage of high-pressure-steam cured units, in drying from a saturated condition to equilibrium with air in a heated building, is about 50 percent less than in moist-cured units.

10. The strength of high-pressure-steam cured units is influenced by the amount and character of siliceous material in the mix but in much less degree in lean and dry mixes than in rich and wet mixes.

11. High-pressure-steam curing results in lower bond stress between steel and concrete.

Further explanation within this report, stated the following: "The reason for the existence of these desirable properties in high-pressure-steam cured products is that the curing of concrete in hot steam produces different reaction products from those occurring in concrete subjected to normal temperature curing. While the committee is not able to enumerate all the chemical changes that take place, there are two that are believed to be mainly responsible for the improved physical properties. The high strength developed in a few hours of steaming is due in part to the acceleration of the normal process of hardening; but a material contribution to strength comes from the "sand-lime brick" reaction, that is, from a combination of lime and silica to form a hydrated calcium silicate. In the case of portland cement products the lime is not added but is hydrolyzed from the cement. Silica is present in the cement and additional amounts may occur in the aggregate or may be added. The stabilization probably results, in part, from the conversion (or partial conversion) of the amorphous calcium silicates to crystalline forms which do not swell and shrink as much as the amorphous forms with increases and decreases in moisture content. Consequently, shrinkage from drying and expansion from wetting are of a lower order than those exhibited by concrete curing at normal temperature. Moreover, at elevated temperatures and pressures, a larger proportion of the dicalcium silicate hydrates are apt to be formed than in products cured at normal temperatures; and at the elevated temperatures the silicates in the presence of the aluminates form a series of compounds called hydrogarnets. These compounds, which contain lime, alumina, silica, and water of crystallization, are very stable and are highly resistant to the action of sulphate solutions. The actual effects of high-pressure-steam curing are undoubtedly more complex than had been indicated, but it is believed that the chief reactions are substantially described."

On basis of accepting the foregoing statements as giving a reasonably true picture of what high-pressure-steam curing accomplishes, the committee[2] proposed the following tentative definitions:

"High-pressure-steam curing as applied to concrete products shall be understood to mean any process of curing in saturated steam under a pressure and for a period sufficient to produce a stabilized finished product, such that a linear shrinkage thereof from a saturated condition to that after drying to constant weight at 212 deg. F. shall not exceed .03 percent."

Additional research conducted by Experiment, Inc., an independent research group in a report of January, 1951, on the study "Comparison of Curing Methods of Concrete Masonry Building Units Using Drying Shrinkage and Moisture Movement Factors as the Criteria" formed

[2] Committee composed of Harold J. Levine, chairman; J. O. Chenery, M. W. Ferguson, Douglas E. Parsons, J. C. Pearson, Luther G. Randolph, Paul M. Woodworth and J. Morley Sander.

the following conclusions:

1. The high-pressure-steam curing method produced a precast masonry building unit having a smaller percentage drying shrinkage than the high-temperature-steam curing method.

2. The high-pressure-steam curing method produced a precast masonry building unit having a smaller percentage of moisture movement than the high-temperature-steam curing method.

3. The drying shrinkage and moisture movement resulting from high-temperature-steam curing can be reduced by re-curing with high-pressure-steam.

4. After the minimum curing time with high-temperature-steam, a continuation of curing does not reduce the drying shrinkage or moisture movement factors, whereas a continuation of curing by high-pressure-steam curing will reduce the drying shrinkage and moisture movement factors. This indicates that the 170 deg. F. maximum temperature in the high-temperature method does not carry the potential chemical changes to completion, whereas the 357 deg. F. maximum temperature and moisture conditions in the high-pressure curing does allow the chemical change to progress nearer to completion.

5. The British Standard method of measuring drying shrinkage and moisture movement is a practical, relatively quick method of testing drying shrinkage, and is applicable to masonry units manufactured in this country.

Among others more recent investigation studies confirming the advantages of high-pressure-steam curing, was the concrete masonry investigation, 1952 progress report No. 7 on "Volume Change Characteristics of Blocks and Wallettes", sponsored by the Office of the Chief of Engineers, Department of The Army, conducted by the Concrete Products Research Laboratory of the University of Toledo.

I dare to say that if as much interest had been evidenced during the last 20 years to press the investigations and developments of high-pressure-steam curing (on the basis of information available that long ago) as has been done to suppress it, the industry would, no doubt, be producing an overall improved product. We cannot avoid realities; the cracking of concrete masonry structures due to moisture changes confronts us with a problem that must be solved.

As a quality control measure, the cement industry laboratories use the Autoclave (or accelerated) Test method to predetermine the anticipated behavior of their product. There is an Autoclave Test specification, A.S.T.M. C126-50T, applicable to clay facing tile, which is intended to serve as an accelerated time test on crazing and checking of product and product facing finish.

By this Autoclave Test you prove whether you have anything disruptive in your materials, whether your cement or the other ingredients you use will disrupt and cause ruptures later on. This is an accelerated test. When concrete masonry units come from an autoclave after a proper curing cycle and there is no disruption, we have taken it all out. We have tested it. That unit is already tested against destructive properties that a known masonry unit may develop later on. Would it not be a satisfaction to know that fact about every masonry unit you sell?

After making a visit and a survey of several plants that have been using high-pressure-steam curing for a number of years, and after making a thorough study as an individual producer concerned with improving the quality of his product, one aggressive products manufacturer, Noel Harter, Harter Marblecrete Stone Co., had this to say a short time after making an installation for this type of curing:

"We have only been autoclaving about a year and a half and have made about six million blocks in that time. Before we started autoclaving, we used to have complaints of cracked walls—about four or five or six complaints a week—but since we have been autoclaving, we have found no cracking, at all. That's a pretty strong statement, but it's a fact. There are a lot of jobs that we haven't seen, but our feeling in the matter is that we are very happy with autoclaving! . . . We don't recommend it as a cure-all. It takes good building design and good structural design to go along with it."

The cost of an installation for high-pressure-steam curing has been the frightening obstacle; but producers who have weighed fairly the advantages against the cost of an installation are coming to realize that it has very favorable potentialities profit-wise.

In addition to the afore-mentioned advantage of permitting 24-hour delivery of better quality products from machine to construction job with one-day strength equal to normally acquired 28-day strength, there are the savings reflected in making possible year-round production; reducing stock-pile investments and the cost of money interest thereon; conserving storage space; savings in reduced handling cost from pallets to jobsite; speeding of deliveries; and elimination of prejudice against green and improperly cured products. . . .

As for equipment needed for autoclave curing, it is necessary to have a high-pressure boiler, a horizontal pressure vessel or cylinder, and handling facilities to charge and unload the blocks from the cylinder.

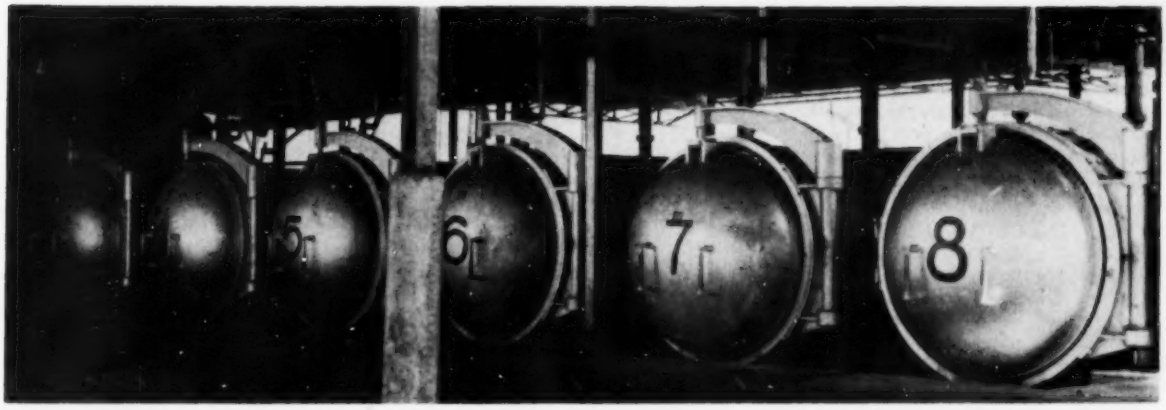
High-pressure boilers are standard units. It is important to determine the boiler capacity necessary to supply an adequate source of steam for maximum allowable build-up time in the number of autoclaves to be operated. The purchase of a boiler of a capacity for future anticipated needs is an initial investment well spent. Where steam can be purchased economy may be effected.

Steam is introduced into the autoclave slowly at the beginning of the cycle with the exhaust valve open until the cylinder and contents have been slowly brought up to 212 deg. F. (the temperature of steam at atmospheric pressure), after which the exhaust valve is closed and the steam valve opened by degrees until the maximum steam pressure is reached. This maximum pressure is usually maintained for eight hours.

At the end of the eight-hour maximum temperature-pressure curing period, the steam valve is closed and the exhaust valve is opened by degrees, allowing a gradual reduction of temperature and pressure. Steam may be discharged into the open, or, by tie-in lines to adjacent autoclaves, it can be used to preheat another cylinder preparatory to steaming. The temperature of the product when removed from the autoclave is recommended to be not greater than 200 deg. F. Gradual application of the steam during the heating-up period and the reverse of this procedure during the cooling-down period eliminates disruptive action in the product and diminishes the tendency for minute checks or cracks to form on the surface of the masonry units. All tests indicate an advantage in curing at approximately 350 deg. F., rather than at lower temperatures, and at such temperature the working pressure of the autoclave is approximately 125 p.s.i. The curing cycle is generally 12 to 16 hours, including the 8 hours at maximum-temperature.

While the large majority of autoclaves in use in the industry today are of 78- or 79-in. diameter, vary-

(*Continued on page* 268)



N.C.M.A. Visitors Please Note Washington D.C. Has Latest Installation of Autoclaves

● These six new autoclaves at National Brick & Supply Company's plant near Washington, D.C., have a combined capacity of 15,120 units. The cylinders are 8 ft. 1 in. in diameter and have a clear shell length of 113 ft.

another ON THE SPOT report

BLOCK makers who attend the 34th annual convention of the National Concrete Masonry Association in February will also have an opportunity to inspect one of the industry's newest and most modern installations of high-pressure-steam curing facilities. The convention will be held in Washington, D. C., just a few minutes' cab ride from the National Brick & Supply Company's plant at Terra Cotta, D. C., where work was completed several months ago on the installation of six new autoclaves. Designed to accommodate 35 standard 72-block steel racks, each cylinder has a clear shell length of 113 ft. and an inside diameter of 8 ft. 1 in.

For those who would like a preview of what National has to show, and for others who would like a permanent record of what they will see when they visit the plant during the convention, THE CONCRETE MANUFACTURER arranged with Edmund H. Brooke, vice-president of the firm, to publish the accompanying detailed description. It is believed that there will be more than usual interest in details of construction and operation because of the current upsurge of interest in the whole subject of high-pressure-steam curing.

By WILLIAM M. AVERY

● General view of National's plant and extensive storage yard. Low building in the center houses the new high-pressure-steam kilns.

National is no recent convert to the idea of autoclave curing. For years the company has operated two comparatively small cylinders in connection with the production of concrete brick. Still in service today, these units have a clear length of about 72 ft. and an inside diameter of 6 ft. Each accommodates 22,000 standard concrete brick. For a time some years ago the company experimented with curing standard concrete masonry units in these cylinders, but the practice was abandoned because the units could not be loaded economically and because the capacity was insufficient for a modern block plant.

About four years ago it became necessary to replace the relatively small high-pressure boiler which served the two brick cylinders. Before undertaking this work the company reviewed its whole position with respect to autoclave curing, and came to the conclusion that in the

fairly near future it might undertake a considerable expansion of high-pressure-steam curing facilities. With this possibility in view, a 250-hp. water-tube boiler (equivalent to 500 hp.) was installed to provide sufficient steam for present requirements as well as for future needs.

The boiler plant is a modern oil-fired, fully-automatic installation housed in a separate building some distance from the new autoclaves. The unit operates on forced draft, and the installation includes a complete Zeolite system for water treatment. Oil is pumped to the burners from a 10,000-gal. storage tank. When the cylinders are operated on a 24-hr. schedule, fuel oil is consumed at the rate of about 12,500-gal. per week, this notwithstanding such economy provisions as an automatic high-pressure line for returning condensate to the boiler preheater.

The autoclaves themselves are of all-welded construction, with 11/16-in. steel boiler plate forming the shells. A 2-in. layer of fiber glass covered by aluminum vinyl sheaths the cylinders from end to end to provide insulation. The six saddles under each unit provide for a total movement of about 3 in. which takes place as the cylinders expand and contract.

The cylinders were designed for a working pressure of 155 p.s.i., although in practice they will be called upon to withstand a pressure of only 140 p.s.i. The difference constitutes a credit against future down-rating which will occur as corrosion reduces the thickness of the shells. In anticipation of some day utilizing the new autoclaves for vacuum drying, the shells have been reinforced against external pressure by means of steel channels located at the third points.

The main steam header consists of 6-in. and 4-in. pipe from which 2-in. supply lines lead into each of the cylinders. The manifold inside each cylinder consists of a 2-in. line containing seventeen ¼-in. diameter holes spaced equally throughout the length. The holes are so located as to direct the steam against the side of the cylinder in order to achieve the maximum turbulence and to prevent condensation from dripping onto the block. The number and size of the holes were determined by experimentation directed at obtaining the desired rate of pressure buildup in each cylinder with its supply valve wide open. This prevents the rapid wearing of valve seats which would almost inevitably occur if it were necessary to crack the valves during the buildup stage.

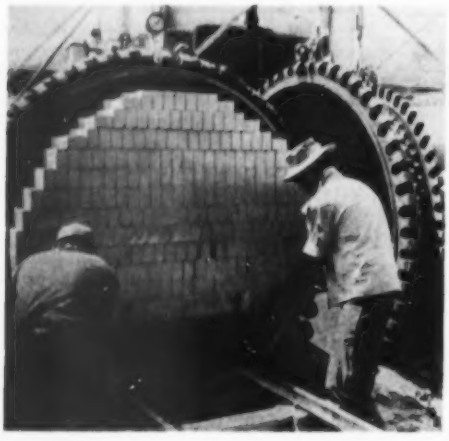
At the termination of a cycle of curing, the cylinders are blown down by opening 5-in. valves which are connected to a header of the same size, this operation being carried out at full pressure. From the header the steam is piped to a 12-in. exhaust manifold which is about 12 ft. in length. This manifold is fitted with a dozen 5-in. nipples—6 pointed horizontally against a baffle and 6 pointed vertically—in order to muffle the sound of the escaping steam.

After a cylinder has been blown down, carbon monoxide fumes and hot air are exhausted through a 30-in. diameter duct serving all six of the new autoclaves. This duct is located on the roof above the cylinders, and each unit is connected to it through a 12-in. valve and a flexible boot. A 30-in. Claridge fan driven by a 30-hp. motor pulls a sufficient volume of air through the duct so that it is possible to enter a cylinder almost immediately after it has been opened.

The cylinder doors were supplied by Blaw-Knox and are of the quick-opening type which are opened and closed by expanding or contracting a split ring. Davits attached to the sides of the cylinders support the doors when they are swung away from the openings during loading and unloading operations.

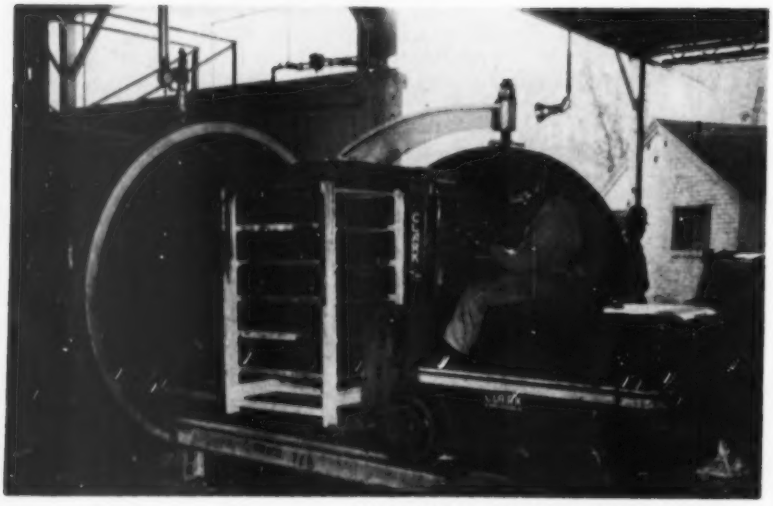
Rails extending the full length of each curing cylinder permit the operation of conventional lift trucks within the cylinders. Small flanged wheels attached to the regular truck wheels engage the rails when the trucks enter the cylinders, the autoclave foundations being sufficiently lower than the plant floor to bring the rails to the required level. The gap between the plant floor and the rails in the cylinders is spanned by means of a set of movable bridge tracks which are handled with an overhead monorail hoist.

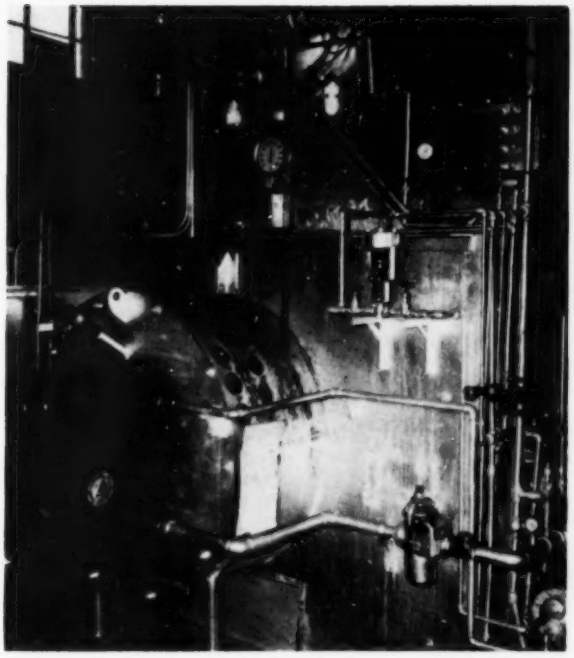
The standard 72-block steel racks are loaded athwart the vessels, resting on angle-iron shelves which are welded to the cylinder walls. The inside diameter of the autoclaves (8 ft. 1 in.) was determined on an empirical basis in order to accommodate existing curing racks, while the number of cylinders and the length



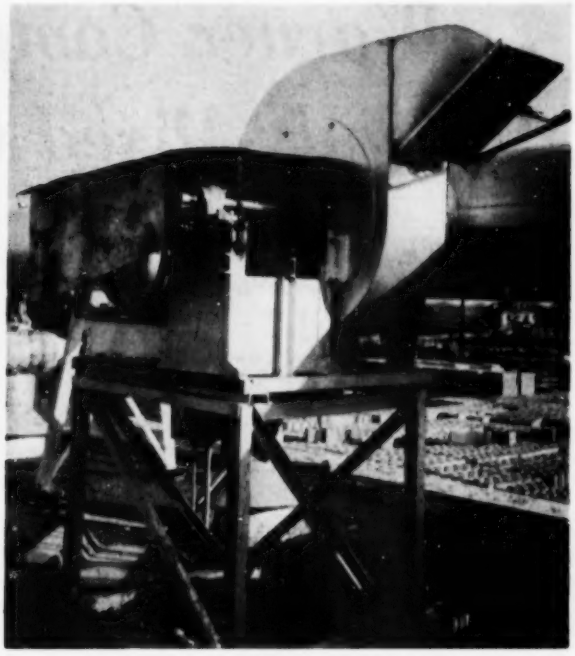
● Left: National has used these smaller cylinders for many years in curing concrete brick. Doors on these units are bolted in place to withstand the steam pressure.

● Below: Flanged wheels enable lift trucks to drive in and out of the cylinders on rails. Doors are of the quick-opening type.





● View of the 250-hp. water-tube boiler which supplies high-pressure steam for all eight of National's cylinders.



● The 30-in. fan and duct work by means of which carbon monoxide fumes and hot air are quickly exhausted from the autoclaves.

were established to take care of the full production of two Besser Super Vibrapacs.

The cylinders are loaded one at a time, using the full output of both block machines in order to accomplish the loading in minimum time. When 35 racks (or 2520 8-in. equivalents) have been loaded, the door is closed and the steam supply valve is opened wide. Pressure and temperature are built up at a uniform rate to approximately 140 p.s.i. and 360 deg. F., these conditions being established in from 2 to 3 hours after the door is closed. Full pressure and temperature are maintained for 5½ to 6 hours before the blow down, which is accomplished within 30 to 45 minutes after the steam is cut off.

The company has developed a mix formula which is designed to take full advantage of curing with high-pressure steam. About 40 percent of the cement which would ordinarily be used is replaced with silica flour to obtain the full benefit of the sand-lime reaction. Thus when lime is hydrolized from the portland cement at the higher temperatures made possible by pressure curing, relatively stable hydrated calcium silicates are formed. These crystalline compounds undergo considerably less volume change as a result of changes in moisture than do the amorphous calcium silicates which are formed at ordinary curing temperatures. It is for this reason that pressure-cured units, in drying from a saturated condition to an approximate balance with the moisture contained in the air of heated buildings, show only about half as much shrinkage as units cured at atmospheric pressure.

National also adds about 25 lb. of chemical hydrated lime to each batch. This addition seems to have a beneficial effect upon the moisture retention properties of the concrete, and also provides lime for the silicas to work upon during the initial, lower-temperature stages of the process. At present the addition of the silica flour is a hand operation involving the use of bagged material, but the company plans to install bulk storage bins, and to feed the silica to the batcher by means of an Airslide.

In advertising its high-pressure-steam-cured masonry units to the Washington market National has elected to use the descriptive term "stabilized concrete". Since the full output of the plant is autoclaved, the company's new trade mark is built around the idea that Nabco blocks "ring like a bell".

National is currently producing 30,000 8-in. equivalent masonry-units per day on two 10-hr. shifts, plus 44,000 concrete brick per day on a single shift. Three Jackson & Church brick presses (two 6-pocket machines and one 12-pocket unit) are used in the production of concrete brick. Cinders are used predominantly in block production, although bank sand, dug from the company's own deposit adjacent to the plant, is also used. National also operates on the same property a modern plant for the manufacture of the Dox Floor & Roof System. Production runs around 3,000 sq. ft. per day on a single 10-hour shift.

Bitter and Blakely Appointed To Staff of Maule Industries

Officials of Maule Industries, Inc., of Miami, Fla., producers and manufacturers of concrete, quarry, and concrete products, building materials and builders' supplies, have announced that William Bitter Jr., Miami Springs, former analyst of job evaluation and salary administration of Eastern Airlines, Inc., has been appointed personnel director. At the same time it was announced that Thomas D. Blakely also of Miami, has been made fleet superintendent in charge of the company's more than 400 pieces of automotive equipment. All of these units are company owned, and are serviced and maintained through Maule's eight separate repair shops.

In 1950 Mr. Bitter was selected to assist the management consultant firm of Mead, Carney and Co., New York City, in setting up a job evaluation and salary administration program of Eastern Airlines. At Maule Industries he will have his headquarters at the Red Road Plant, 1000 N. W. 57th Avenue, Miami.

Prior to joining the Maule staff Mr. Blakely, was fleet superintendent of National Brands, Inc., in charge of that company's more than 300 trucks operating throughout Florida. He was previously associated with the Olds Motor Company, the International Harvester Company, the Miami Beach Railway, and the Hertz Truck Leasing Division of General Motors.

Warner Company's Newest Ready-Mixed Concrete Plant

another ON THE SPOT report

ONE of 1953's outstanding new ready-mixed concrete plants is the fine addition to the Warner Company's network of such properties serving the Philadelphia area. The major facilities were designed by E. L. Shoemaker, director of engineering of Warner Company, and fabricated and erected by Fanning-Schuett Engineering Company. The entire project was carried through to completion between early May, when the contract was let, and September 16, when the first concrete was batched through the plant.

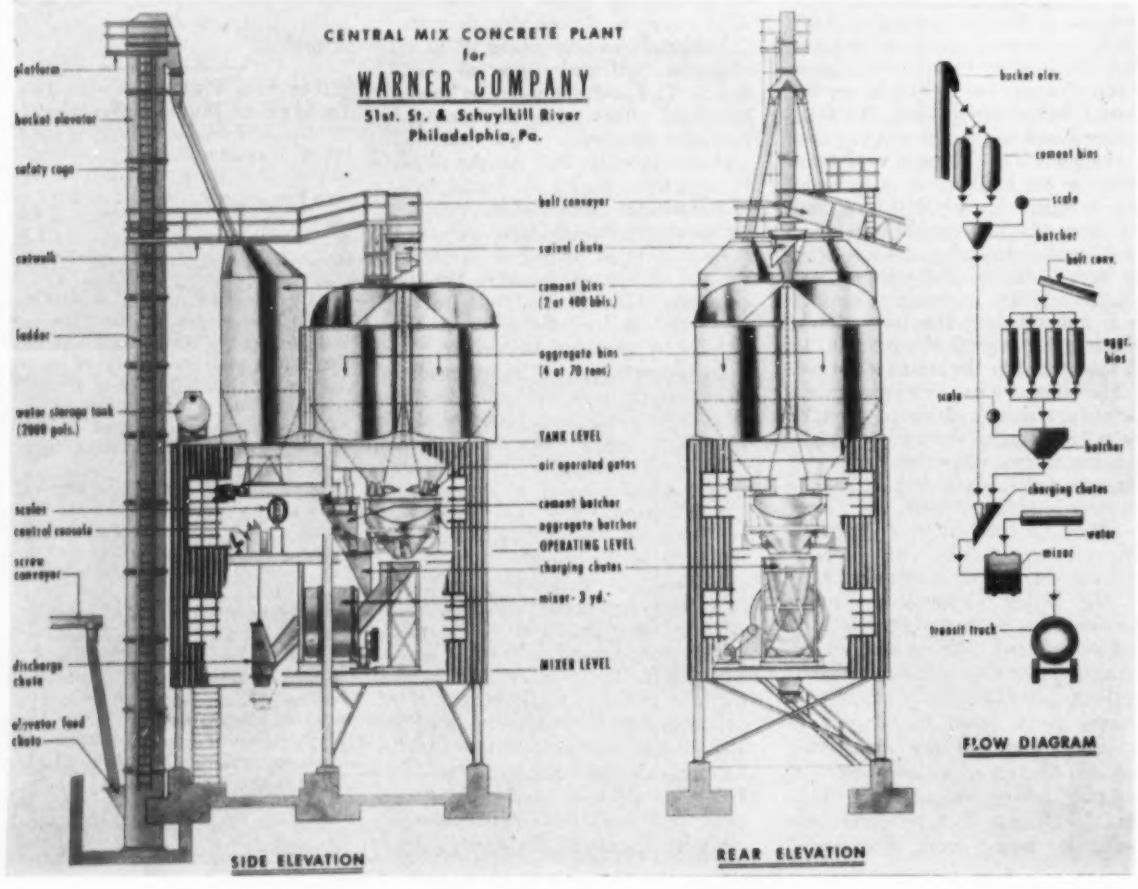
The new plant is located at the Company's 51st Street yard on the west bank of the Schuylkill River in the city of Philadelphia. Originally established as a general building materials yard to serve all of west Philadelphia, this yard was abandoned during the depression and all the facilities, including a concrete-mixing plant, were dismantled. A portion of the yard was reactivated in 1940 for wholesale distribution of aggregates, but ready-mixed concrete operations were not resumed until completion of the new facilities which are the subject of this report.

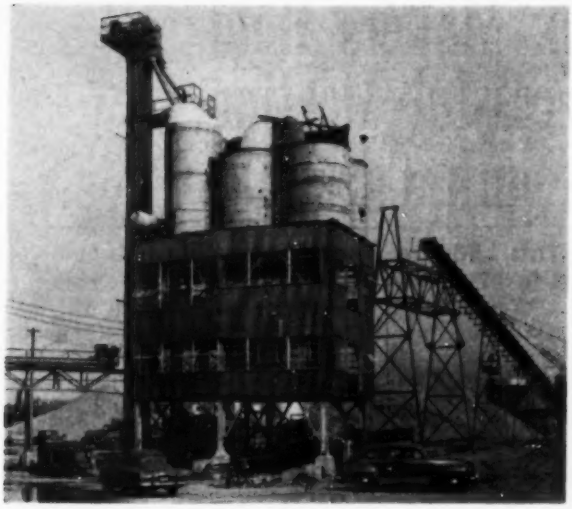
Designed for a capacity of approximately 125 cu. yd. per hour, the facilities include a 3-cu. yd. Ransome central mixer. Four 60-ton aggregate bins are provided, each 11 ft. in diameter. These bins are normally used to store concrete sand, 1- and 2-in. gravel, and either lightweight aggregate or an aggregate smaller than 1-in., *e.g.*, ½-in. gravel.

Sand and gravel come to the yard in barges, which are unloaded by means of an American Revolver crane. Sand and gravel are placed in open-top conical bins which parallel the wharf, and are subsequently withdrawn from these bins into trucks for delivery to customers, stockpiling, or supplying the concrete plant. Lightweight aggregates come into the yard by rail over an elevated siding. They are dropped into truck bins under the siding. From the bins the material is taken out by trucks to the trade, or to the boot of the elevator to feed the bins over the concrete plant. In the latter case, the trucks dump into a steel hopper mounted over the tail pulley of an inclined belt conveyor which discharges at the top of the concrete plant into the various aggregate bins.

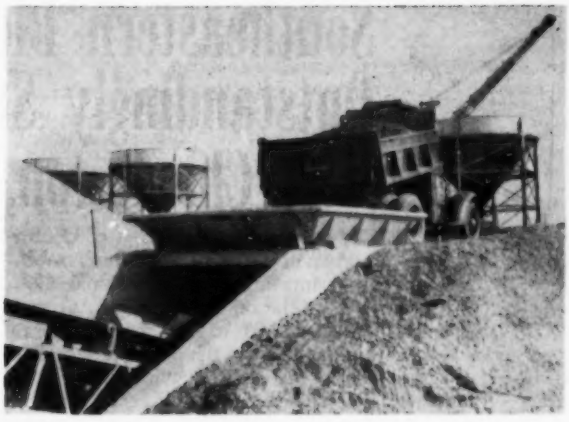
The cement-storage system consists of two 400-bbl. steel tanks placed adjacent to the aggregate bins. The

Elevations and flow diagram of the new central mix concrete plant of the Warner Company, Philadelphia, Pa. Rated capacity of this modern, exceptionally well equipped plant is 125 cu. yd. per hour.





This photo taken during the final stages of erection shows the over-road screw conveyor for handling cement, at the left, and the inclined belt conveyor for elevating aggregates to the storage bins.



One of the company's trucks dumping gravel into the hopper from which the inclined belt conveyor is fed. Conical bins in the background are used for storing aggregates as they are unloaded from barges.

feed to the cement batcher is by a 14-in. screw conveyor. Incoming cement cars are shunted onto a 10-car elevated siding which serves the plant. The handling system consists of a hopper below the rails, a 12-in. screw conveyor which crosses the roadway between the siding and the plant, and a bucket elevator. All of these facilities were designed to handle cement at the rate of 200 bbl. per hr.

All the operations pertinent to batching, mixing, and mix discharge are actuated by compressed air from a single-control console, and the materials are accurately weighed by means of two scales manufactured by the Bennington Scale Mfg. Co., and equipped with Detecto dial-heads. One of these units is of 6,000-lb. capacity for cement, the other of 25,000-lb. capacity for aggregates. The water addition is controlled by volume from a syphon tank.

Another noteworthy feature of the plant is a separate admixture room on the ground floor for the storage and preparation of such materials as Pozzolith and calcium chloride, which are mixed and stored in tanks and subsequently pumped into smaller tanks mounted above the mixer. A Darex A.E.A. dispenser is also located on the batching floor. A boiler is installed adjacent to the plant to permit the delivery of heated concrete during cold weather.

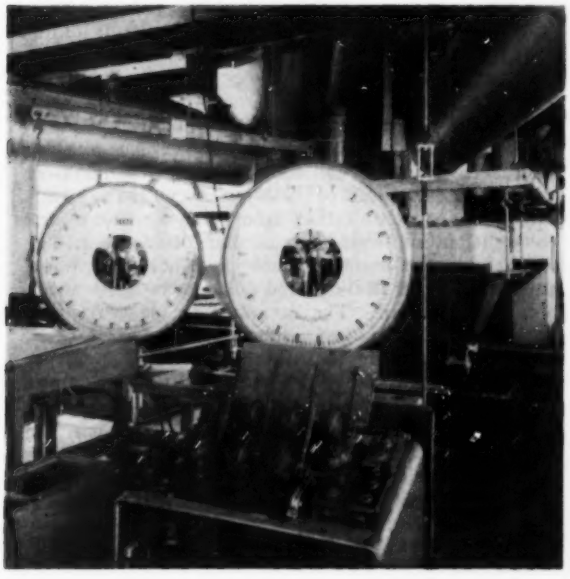
A unique feature of the Warner Company's ready-mixed concrete operations is that every load of concrete is supervised and certified by the testing and inspection engineering firm of Harry F. Irwin. The Irwin organization has a full-time inspector stationed at each of the Warner mixers. Where there are two mixers at a yard, two inspectors will be found. These men have absolute and final authority over every load of concrete that leaves the plants.

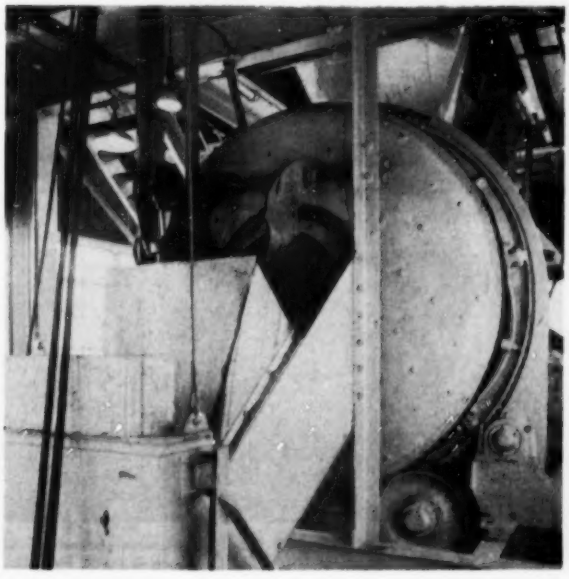
Materials are checked for grade and moisture every hour of the day, and a complete record is kept of every batch that goes out. Two days out of the week the inspector at the plant is provided with a helper for the purpose of making test cylinders. Complete records are also kept on

(*Continued on page* 265)

Left: View of the batching floor showing the control console, the dial heads with which the batching scales are equipped, and the batcher proper in the background.

Right: Close-up of the 3-cu. yd. central mixer. Discharge chute at the left is counter balanced so that truck operators can readily lower the unit after they have driven into loading position.





Southeastern Block Makers Hold Outstandingly Successful Meeting At Charleston, South Carolina

TWENTY-SIX states and the District of Columbia were represented at the 10th annual southeastern regional meeting of the National Concrete Masonry Association in November, according to statistics released to the trade press by George W. Katterjohn, president of the organization. The three-day meeting, which was held at Charleston, S. C., drew a total attendance of 272.

The varied program included talks on the following subjects: pitfalls of the wage-and-hour law, high-pressure-steam curing; an architect's impression of concrete masonry; a contractor's views on the same subject; a discussion of prestressing in Europe; messages from N.C.M.A. President Sam Paturzo and President-elect M. E. Rinker; and reports upon various phases of the national association's activities by E. W. Dienhart, executive secretary, William P. Markert, director of promotion, and Theodore Leba, manager of the association's office in Washington D. C.

Guest speakers included John Temple Graves, commentator and syndicated columnist, of Birmingham, Ala., and William H. Gove, director of sales development, Minnesota Mining & Manufacturing Co., St. Paul, Minn.

On these and subsequent pages of this issue will be found some of the more significant and timely quotes noted during the course of the Charleston meeting.

Because of the nature of the subject matter, the report on high-pressure steam curing, presented at the Charleston meeting by Dale Cobb, president, Autoclave Building Products Association, is given in full on page 245 of this issue.

● Ted Leba, Paul Klemens, and Bill Markert paused for this picture on the steps of the Dock Street Theatre in Charleston.

● Glenn Whitman, Burns & Russell Co., Sam Paturzo, president of N.C.M.A., and G. D. Bennett, Tidewater Concrete Block & Pipe Co.

TED LEBA on Functions of the Washington Office:

"The functions of the Washington Branch may be divided into three spheres of activity: namely, (1) government affairs which pertain to laws and regulations affecting our industry, (2) providing technical assistance to government agencies which use the products of our industry, and (3) assisting producers in solving their problems which relate to regulations and to public works projects. I do not do any so-called lobbying-on-the-hill."

* * *

"The Federal Civil Defense Administration is a very active agency of the government. In its endeavors to develop a program of defense of the industrial might of this country, and also protect the citizenry, it has promoted the use of concrete masonry by providing designs of home shelters in reinforced block construction, and collaborating with the Office of Defense Mobilization for the rapid amortization of A-bomb-resistant features incorporated in industrial structures. The association is working with FCDA to present a program to the FHA which will permit a similar write-off for homes which include shelters or basements designed to withstand bomb attacks. The March 17th detonation at Nevada showed that the safest place for a family to be during an A-bomb attack is in the basement of the home or in a family protective shelter. Such publicity immediately enhances the value of homes which have basements as compared with those that do not. . . ."

* * *

"Speaking of guides and rules on the use of concrete masonry and accessories, brings to mind the work being done by the Bureau of Standards in developing for the Office of the Chief of Engineers a manual for design and construction procedure for permanent construction utilizing concrete masonry units. This manual is imporant to the industry because it establishes limitations on the uses to which concrete masonry may be put; deals with the application of reinforcing steel to prevent cracking; and discusses the problem of moisture content limitation. During the past week the project received its final review and will soon go to the printers for publication. The staff of the association was frequently called in for consultation, and our suggestions and recommendations were given careful consideration. The manual will be made available to other government agencies, and in all likelihood will also be made available to the public. The manual will give producers the opportunity of promoting concrete products by placing copies in the hands of architects and engineers. I sincerely believe that the reason why more structures are not designed in concrete masonry today is because designers are afraid to employ a product which they do not fully understand how to use; and I also believe that more of the cracking in walls should be attributed to improper design rather than to inferior manufacture, assuming, of course, that the requirements of a recognized specification have been complied with."

● Left: Doc Rinker, president-elect of N.C.M.A., and Ann Katterjohn, just before Ann drew Doc's number for one of the door prizes. We doubt if there was collusion, but we wouldn't blame Doc a bit.

● Right: After assisting in the capture of Fort Sumter, Mr. and Mrs. John Ross, Marietta Concrete Corp., posed for this picture beside one of the old cannons.

● Above: George Fritz, Mr. and Mrs. E. W. Dienhart, and Mrs. Fritz made up this smiling group as they stood on one of the balconies of the Fort Sumter Hotel.

● Left: R. F. Lettwich, Minimix Products, Inc., and Joseph Pitha, Bergen Machine & Tool Co.

IRWIN KAHN — A Contractor's View on Blocks:

Following are some of the faults this speaker has found with concrete masonry units:

1) Too difficult to obtain specials, particularly when dealing with small producers.

2) Too much cutting required on the job. The speaker stated that his company spends for cutting alone 2 cents per sq. ft. over an entire job — the same amount as for mortar.

3) Costs of handling and breakage in handling are excessive. Mr. Kahn believes that palletizing may be the best solution for both of these problems.

4) Not enough pleasing surface variations to give the product wide appeal as an exposed material.

Mr. Kahn's conclusion: "The Block industry's inroads upon the markets for plaster and brick *can* be made secure and permanent, but the job calls for some hard work."

SAM PATURZO on Making Preparations for a Buyers' Market:

"As you all know, we have been going through a period of terrific demand for our product. This situation has made too many of our organizations lax and inefficient, and unable to cope with a future situation in which demand and supply may be in balance, or in which we may have more blocks than we can sell."

"The attitude of many of our salesmen needs to be changed. Instead of telling the customers what is going to be done in the furnishing of his job . . . we will have to do an about face . . . and render a great many small services. Special units which will eliminate a lot of cutting and fitting on the job will have to be made available."

"Streamline your production — spend some money on plant improvements — give careful study to new methods — and above all make your plant personnel quality-conscious."

"Overhaul your sales staff — make sure your salesmen are well trained and know what they are saying when selling your product. A special training program will help greatly."

"Take the extremely important step of joining the National Concrete Masonry Association. Take advantage of the great number of sales aids in the form of prepared literature at very low cost. Take advantage of the very able engineering staff of the association to obtain help in solving your technical problems. Take advantage of our Washington office and its multitude of contacts with government agencies."

"Take the above precautions, and I say the passing of the boom need *not* lead to trouble."

BILL MARKERT on N.C.M.A.'s Plans for an Expanded Promotion Program:

"We have plants representing investments of thousands of dollars, and we must safeguard our future security through sound, far-sighted merchandising programs. Competitive industries are making a wholehearted effort to regain the markets which we have taken away from them."

"Your association's plans for an expanded program of promotion and technical service has the following immediate objectives: to overcome objections to concrete masonry; to build widespread acceptance of concrete masonry among contractors, architects, lending agencies, and the general public; to create a more favorable climate for effective promotion at the local level; to improve mutually the relations between our industry and other industries; to boost gradually but surely concrete masonry's share of sales potential for building materials."

"The national and local-level program planned for 1954 will incorporate trade publication advertising to reach architects and engineers, large-volume builders, and contractors and masons; and it will call for an increased output of special sales aids and merchandising tools, including informative handbooks for various categories of masonry users, master mason bulletins, advertising mats, radio and television "spots", and a wide assortment of direct mail and follow-up tools."

"Although the program for 1954 is the most far-reaching plan ever undertaken by our industry, it should still be regarded as only a beginning. The enthusiastic response it has received from members indicates a wide belief that this is what the industry needs."

● Right: About to board the launch for the harbor trip, Mr. and Mrs. George Oswalt obligingly turned to face our cameraman.

E. W. DIENHART on Highlights of N.C.M.A. Activities:

"The southeastern regional meeting is expanding each year, and its growing importance is clearly indicated by the caliber and the number of the producers who attend, and by the presence of representatives of the national association, the Portland Cement Association, many machinery manufacturers, and the industry's three trade journals."

* * *

"Your national association has had a spectacular growth, and it has been especially fortunate in attracting good personnel."

* * *

"It's quite a chore to be one of the directors of the National Concrete Masonry Association. They, as well as the members of the various working committees, must meet twice a year at their own expense."

* * *

"The association's 1953 meeting promises to be a big one. It will be held at the Shoreham Hotel in Washington, D. C., from February 7 to 10, and I hope all will attend who are present at this gathering."

M. E. RINKER, President-elect of N. C. M. A.:

"I am amazed at what the National Concrete Masonry Association accomplishes with the dues paid in, and I cannot see how anybody can afford *not* to be a member."

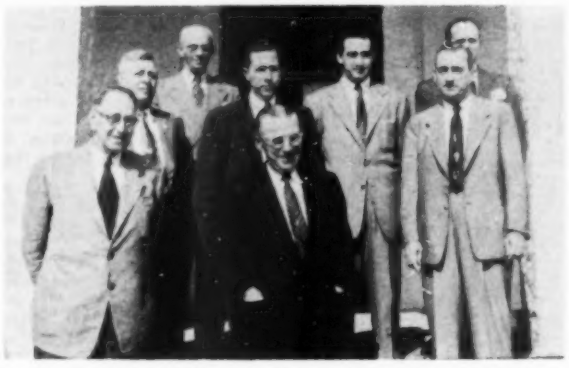
* * *

"I think the establishment of a Washington office was one of the best moves your association ever took. It provides a big influence on one of the biggest markets in the country. We needed some one on the scene."

* * *

"The outlook is somewhat uncertain, and we need more than ever to band ourselves together with the strongest ties for mutual support. We must go ahead to assure the future, and nobody really wants some one else to carry the load. There is no better way to share the load than through membership in N.C.M.A."

● There are a couple of people in this picture of the harbor party we couldn't positively identify; so we gave up.



● Officers of the Southeastern Division, left to right: C. I. Needham, H. A. McGee, Jr., E. M. Barnes, Frank Williamson, George W. Katterjohn, William R. Ireland, Leon K. Camp, and Henry Pommer.

WILLIAM A. CARLISLE — An Architect's Impressions of Concrete Masonry:

"The pyramids are probably the earliest example we have of block construction, and modern architects are trying to go back to some similar system that provides both support and finish, with one material. Having regard for the fact that both plaster and stucco are prone to crack, what purpose is served by covering masonry walls with such materials?"

Some things this speaker believes the block industry should do:

1) Bring about maximum standardization of sizes.

2) Improve the quality of concrete masonry products, even if it necessitates eliminating the unqualified back-yard producer whose past operations have given the industry such a black eye.

3) Co-operate with other factors in the building industry for the purpose of developing a co-ordinated training program for masons. Why struggle to manufacture a prime product if it is doomed to be botched at the point of use?

WILLIAM H. GOVE — Some Memorable Phrases from His Talk on Selling:

"I started out as a salesman when I was too young to sell and too old to be a juvenile delinquent. For two years all I did was grin — then I found out that the company's Number One salesman hadn't smiled since 1929."

"Change is innoculating *new* people with *old* ideas."

"Listening can be far more persuasive than anything we say. People start to crack up when they forget to listen to themselves. . . . The only way to find out what the customer wants is to ask him — and then listen."

"Service is the only selling philosophy without a flaw. . . . Just selling alone is like kissing your sister — it's proper enough, but there's no future in it!"

GLOOMY About the Business Outlook? This Appraisal of the Home Market Should Cheer You Up Considerably

WHAT is the future of home building? Is there room in the American economy for continued production of new homes at the phenomenal rate of the last eight years, during which 8,000,000 new housing units were built? Those questions are deeply significant, not alone to home buyers and builders, but to the entire nation.

It has been demonstrated clearly during those eight post-war years that the prosperity of our country is linked directly to the prosperity of the home-building industry.

The buoyant effect of an active home-building market is felt throughout the national economy,

By JOHN M. DICKERMAN
Executive Director
National Association of Home Builders

and a slump in building strikes at employment and purchasing power in all lines of business.

In my judgment, there is no shadow of doubt that there is and will continue to be a real need for at least 1,000,000 new homes a year. And that need will increase in the early 1960's, when the big crop of "war babies" born during the 1940's will be coming to maturity.

What is the arithmetic behind this conclusion? The first factor is the number of new family formations. The wedding march was muted during World War II, when millions of young men were in service overseas.

In the mustering out period after the war, new family formations soared to a 1947 peak of 1,500,000, after which they declined steadily to 1,100,000 in 1951 and something over 500,000 at present. For the rest of the 1950-60 decade they are expected to remain at the minimum of 500,000 a year.

Obviously, every newly-married couple doesn't rush from the church to the builder's office. However, many start their married lives in new homes; and those who move into older houses, still make their presence felt in the housing market because the occupants of the homes they take over have to have some place to go

The "undoubling" of families is another big factor in housing demand. In 1950, for example, the census showed that nearly 2,000,000 married couples were doubling up with relatives or sharing quarters with friends. Practically all of them represent a potential demand for housing.

Still another crop of housing customers is made up of single individuals or unrelated persons who want to establish separate households. The Census Bureau found in 1950 that this type of occupancy accounted for almost 12 percent of all households, and there is no reason to expect any significant change in this rate.

Beyond question, however, the biggest stimulant to the housing market is the birth rate. The post-war trend of younger marriages and more two- and three-children families has continued into the 1950's, and it is now conceded that by 1960 the population of the United States may well reach 180,000,000, a rise of 30,000,000 from 1950. This factor alone will put a tremendous strain on the productive capacities of the housing industry in the next decade.

There are other demand factors that must be taken into account. One is the replacement of the 60,000 dwelling units that, according to the best estimates, are destroyed each year by fire, flood or other natural disaster, or that are demolished to make way for some different land use.

The replacement of obsolete or ramshackle houses is yet another factor. The building industry thus far has barely kept pace with the demand constituted by new families, and has barely scratched the surface of the replacement market.

It is estimated that it would require more than 200,000 new units a year just to retire all of our existing housing units in 200 years.

By far the most difficult demand element to appraise is the effect of long-range population shifts on our housing supply. Each year millions of families pull up stakes and move to a different part of the country or to a new location in their home town. A reasonable estimate of the additional need created by this rescrambling of population is about 100,000 new dwelling units a year.

There is one big intangible in the housing picture that cannot be ignored in any analysis of the market. For many reasons, such as the natural American tendency to want something better, families find themselves thrust back into the market because the arrival of a third or fourth child has made their old quarters too small.

Another intangible is the so-called "vacancy rate". As shown by the 1950 census, the vacancy rate was only .7 percent of the total supply of non-farm dwelling units. Competent housing authorities believe it should be at least double that rate to allow the home seekers sufficient freedom of choice and to keep prices healthy. It would take production of 100,000 units a year for the next five years to bring the vacancy rate up to 3 percent.

Washington Products Men Hold 25th Winter Meeting

On December 11 and 12 the Concrete Products Association of Washington held its 25th annual winter meeting at the Construction Center in Seattle.

The first day's activities, which centered around the concrete pipe industry, included a description and demonstration of the Puget Sound Basin model by R. G. Tyler and John H. Lincoln, both of the University of Washington.

Speakers included the following: Dr. W. E. Merrill, who spoke on the post-war architecture, economics, and family life of Austria and neighboring countries; Professor A. N. Schrieber, University of Washington, whose topic was competitive pricing and profit control; and R. M. Gilmore on accident prevention.

During the session on block production there was a panel discussion on the present uniform building code and the changes desired by block manufacturers and a second on the recent use of stressed lightweight block slabs. Verne Frese, R. W. Condon, and W. S. Callender led the first panel, and Frank Spangler (Empire Building Material Company, Portland, Oreg.) the second.

How Much Is a Billion?

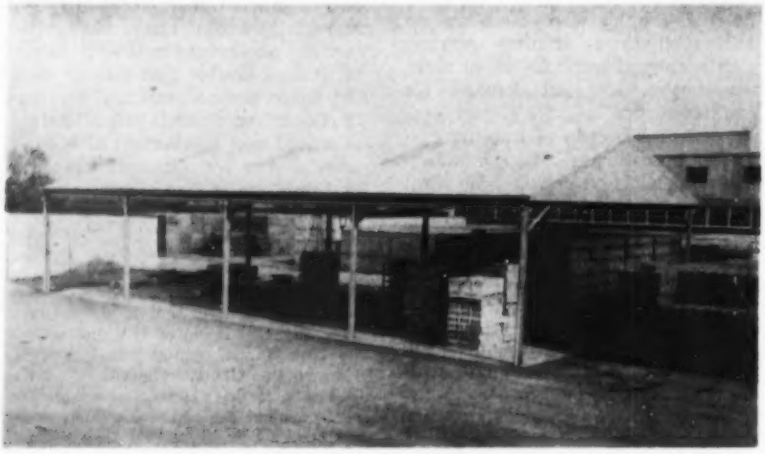
Do you know how much a billion dollars is? For $1,000,000,000 you could build a row of $10,000 houses on 150-ft. lots stretching from the Atlantic to the Pacific . . . buy enough $2,000 automobiles to reach bumper to bumper from Boston to Miami.

To earn $1,000,000,000 it would take the average production worker nearly 300,000 years.

And if you stacked $1,000,000,000 in $1,000 bills, the pile would reach 110 feet above the 555-ft. Washington Monument.

In the 20-year period 1920-1940 corporations paid out $96,000,000,000 in dividends, and $117,000,000,000 in taxes to the government. Sixty-five percent of our national income goes to employees, and 4 percent to stockholders. Business retains 2 percent for expansion.

Motor Driven Turn Tables and Bridge Crane Offbearer Make For Efficient Cubing Operation



● A general view of the 40- by 80-ft. cubing shed which is a feature of the new block plant of York Stone & Supply Company. The building is open on all sides to facilitate lift truck movements.

another ON THE SPOT report

ONE of many newsworthy features of the new block plant of York Stone & Supply Company at York, Pa., is the unique and exceptionally effective arrangement for cubing shown in the accompanying pictures. Like so many basically good designs, its core consists of an old idea refurbished and adapted to new conditions.

As the pictures show, all cubing operations at the York plant are concentrated in a 40- by 80-ft. covered storage shed which is open on all sides. This structure stands 25 ft. away from the doors through which the curing kilns are unloaded, and its main features consist of two 7-ft. diameter Chase motor-driven turn tables set side by side in the floor, and a ⅜-ton Besser overhead bridge crane from which is suspended an air-operated clamp-type off-bearer for removing units from the racks and placing them in cubes.

The main function of the turntables is to rotate the racks 180 degrees in order to provide access to the tiers of pallets on each side. Except that in this application the operation consists of unloading, the turntables serve precisely the same purpose as when they are installed in front of a block machine, a practice which used to be somewhat more common than it is today.

The turntables are large enough to accommodate standard 72-block racks without careful spotting by the fork truck operators. Rotation is controlled by means of two sets of forward, stop, and reverse pushbuttons mounted on the frame of the off-bearer. Thus the operator has complete, finger-tip control of the positioning of the racks as he unloads them.

Fork trucks deliver the racks from the curing kilns directly to the turntables in the cubing shed, the turntables being located on the side of the shed closest to the kiln doors. The cubes are formed immediately behind each turntable, allowing only enough clearance to permit the operator to maneuver comfortably.

Starting with a full rack on each turntable, the usual procedure is to clear pallets from one side of one rack, then switch immediately to the adjacent rack while the first one is being rotated. Because of the increased efficiency resulting from this staggered use of two turntables, it is possible to cube 14 racks of 8-in. units, or a little over a thousand block, in an hour.

All block are cubed at the York plant, bottom courses consisting of 8-in. block being used in lieu of pallets for fractional units. The cubing

● In this view one of the fork-lift trucks is removing a cube of 4-in. units at the left, while the off-bearer operator forms another cube at the right. See text for explanation of three tiers of 8-in. units under the cube being formed at the right.

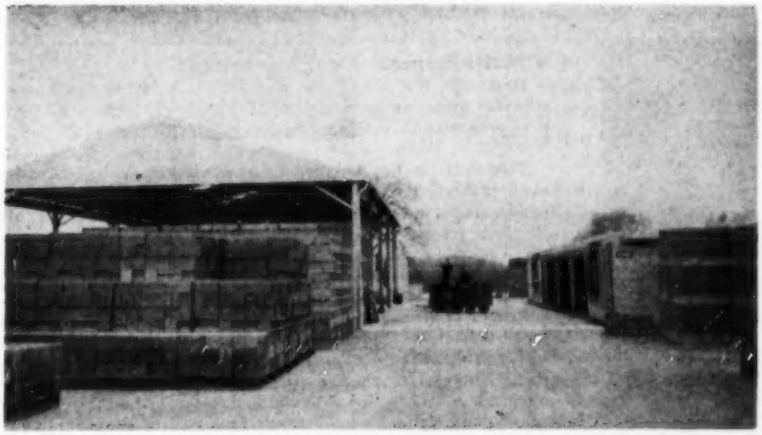
● A view of the turntables from the kiln side. The fork truck is placing a rack of block just removed from the kilns on the left-hand turntable, and the operator is already reaching up with the off-bearer for a pallet load of block. The cube at the right awaits removal to the storage area, and the right-hand turntable has been cleared to receive another rack of cured units.

● A closeup of the cubing operation, showing one of the 7-ft. diameter turntables at the right and the clamp-type off-bearer. The operator is pressing a pushbutton on the off-bearer frame to rotate the rack 180 degrees for easier access to the block.

of fractionals is speeded up considerably by placing *three* courses of 8-in. pallet block behind the turntables. When the first cube has been built, the lift truck removes it with just the top course of 8-in. block, and a new cube is immediately formed upon the two remaining courses of 8's. By proceeding in this manner three cubes can be formed before it is necessary to use the fork truck to place additional pallet block. Cubes of 8-in. block to be used for this purpose are stored right in the cubing shed.

York's standard cube of 72 block consists of an equal number of regular 8-in. units, sash units, and pier block. This cube is formed in such a way that the fork trucks can readily pick up 24, 48, or 72 units at a time, and yet the composition of the partial cubes remains the same as that of the whole cube. This practice is said to result in greater flexibility of delivery operations, since it permits more efficient loading of many types and sizes of trucks. Customers appear to like the arrangement because the combination of standard pier, and sash block in each cube takes care of all usual requirements with the exception of half block, and the company believes that there is a substantial saving in over-all handling costs.

York's cubing shed is in the approximate center of a 300- by 300-ft. paved storage yard. Its arrangement in the general plant layout virtually eliminates lift truck cross traffic and all the confusion and safety hazards which usually accompany such cross traffic. Most of the present shed is needed and used for operations and storage directly connected with cubing. The company plans eventually to double the size of the building in order to provide for some covered storage of its products. A description of the block plant proper and related facilities will be published in an early issue of THE CONCRETE MANUFACTURER.



● This view of the cubing shed shows its location in respect to the kilns. A 25-ft. paved aisle separates the two structures.

Washington Products Firms Consolidate with Graystone

At Seattle, Wash., W. F. Paddock, chairman of the Graystone Concrete Products Company's board of directors, recently announced the consolidation of six western Washington concrete firms. Mr. Paddock stated that Graystone will merge with the Grays Harbor Cement Products Company of Aberdeen, the Lewis Materials Company of Centralia, the Everett Concrete Products Company of Everett, the Graystone Materials Company of Olympia, and the Mason Materials Company of Shelton.

Principal products of these concerns include concrete masonry materials, concrete sewer and culvert pipe, ready-mixed concrete, and precast concrete products.

Mr. Paddock will serve as chairman of the board and secretary of the new corporation. F. M. Kettenring will be president and general manager. Other officials will include the following: W. S. Wilson, vice-president and general sales manager; R. E. Metzger, vice-president and manager of the Centralia operation and chairman of the production committee; and Mott Rieke, treasurer and controller.

It was also announced that R. W. Condon, formerly Seattle sales manager, will become manager of the Seattle operation, and John W. James, formerly Seattle plant manager, will be manager of the Olympia operation. At other plants the managers will be W. B. Judah (Shelton), R. J. Bracken (Aberdeen), and Larry Gourlie (Everett).

3 New York Concerns Sold To Sayre & Fisher Brick Co.

William A. Shea, chairman of the board of directors of Sayre and Fisher Brick Company, recently announced the board's approval of the acquisition of the Cincrete Corporation, Long Island City, N.Y., Inland Building Block Corporation, Mineola, N.Y., both manufacturers of concrete products, and the Hellgate Transportation Company, Astoria, N.Y., all owned by George and David Kogel. The Kogel interests have developed rapidly in recent years, becoming one of the major producers in the United States. This acquisition, which is subject to the approval of stockholders, is to be accomplished through the issuance of 280,000 shares of Sayre's capital stock in exchange for all the outstanding stock of the three companies.

David and George Kogel will become officers and directors of Sayre and Fisher. All personnel of both companies will be retained.

Mr. Shea said that the acquisition will justify the immediate construction of a plant to manufacture lightweight concrete aggregate using Sayre and Fisher clay deposits as a source of raw material. The Kogel properties are now purchasing large quantities of aggregate to produce their concrete products, but will in the future use a large part of the output of this proposed plant.

Upon the completion of the first aggregate plant others will be added to serve concrete products manufacturers in New Jersey, New York, and Connecticut areas which can be reached by water transportation.

NEW MACHINERY and SUPPLIES

• Compression Tester

A new 50,000-lb. testing machine for concrete units has been announced by *Baldwin-Lima-Hamilton*, Philadelphia 42. The hydraulic unit is designed to meet requirements of ASTM test method

C-109-52. It has an 11-in. dia. ram with a 3-in. stroke. Clearance between columns is 17⅜ in., and the maximum vertical opening of 21¾ in. is possible with a removable top strut in which the ball seat of the spherical block is pivoted.

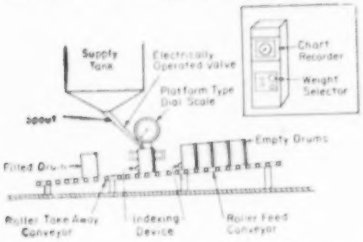
A null-balance Tate-Emery indicator operated by an Emery hydraulic cell in the loading unit and a servo-motor guide the tester. Accuracy within ½ percent of dial reading or one percent of range capacity is promised.

Our Identification No. 101

• Exact Weigh System

"Rule of the thumb" can be costly both in wasted materials and in lack of uniformity in the product, where quantities of materials must be measured out. For that reason, *Richardson Scale Co.*, Clifton, N. J., has devised a weighing system designed to eliminate overages and underages in weighing and filling.

Based on modern instrumentation, the new system is said to permit finer process control when handling liquid or bulk materials fed automatically or by hand to tared containers. An automatic scale, accurate with one percent limits, is used,



and the material is weighed into containers rather than hoppers.

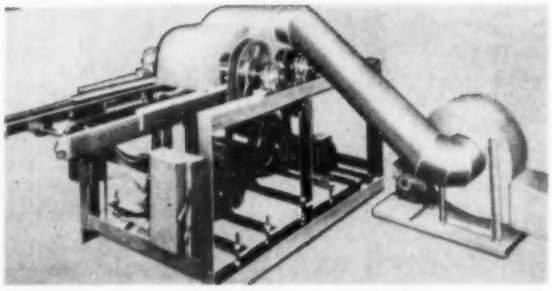
Key to the new tare-weighing system is a military type synchro-mechanism adapted for commercial use. The transducers serve to automatically indicate, control, and print or record. Components in the system are: weighing platform, scale dial, console instrument panel and the transducer mounted on the scale dial.

Our Identification No. 102

• Three-Block Stearns

A new concrete block machine, capable of producing three blocks at a time, has been added to the *Stearns Mfg. Co.* line, the Adrian, Mich., firm has announced. Known as the 50-S, it joins the two-at-a-time Stearns 50 and the three-at-a-time Model 15.

Retaining all the proven features of the Model 50, the new machine uses an 18½ by 26-in. plain steel pallet. It is available as a complete Stearns package—



• Dirty, crusted pallets are cleaned by this Bergen machine at the rate of 3 to 5 a minute. The cleaner may be leased or purchased.

Our Identification No. 105

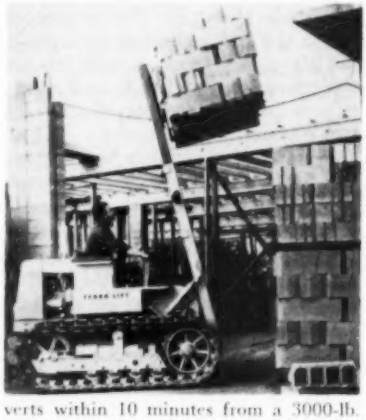
block machine, standard attachment, automatic pallet return and magnetic pick-up offbearing hoist.

Construction features heavy structural members, with all operating parts open for inspection and servicing. The Model 50-S is completely cam and crank-operated, with cams located well below the center of gravity for maximum working efficiency and minimum frame strain.

Our Identification No. 103

• Indoor-Outdoor Crawler

A unique, multi-purpose fork lift truck has been announced by *American Tractor Corp.*, Churubusco, Ind. Mounted on hard-rubber crawler shoes, the unit con-



verts within 10 minutes from a 3000-lb. fork lift truck to a ¾-yd. bucket loader, a 6-ft. angling dozer, or a 30-drawbar hp towing tractor. Used indoors or out, this Terra-Lift M3 comes with a 9 or 12-ft. lifting mast, and has only 6-psi of ground pressure under full load.

Our Identification No. 104

• Multi-Purpose Block Machine

Drain tile, flue liners, water meter boxes and similar hollow concrete units can be made in addition to standard block on a new combination machine being built by *Columbia Machine*, Vancouver, Wash.

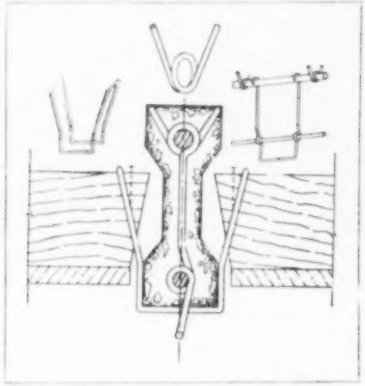
Two years in the making, the new machine, is basically the same as the firm's two- and three-block machines, using regular molds and standard racks and pallets. Field test users report excellent results in the production of 3, 4, 5 and 6-in. drain tile, Columbia says.

One of the "secrets" of the new machine's high production rate is a completely new high velocity agitator which embodies a "super churning action", which, Columbia says, insures a quick delivery of uniform batches into the molds. Another innovation is the use of 12-in. high molds, which permit the manufacture of shapes that will fit an 18 by 12 by 16-in. mold opening on the two-block model and 24 by 12 by 18-in. on the three-block Columbia. Three to four pallets per minute are possible with the 12-in. high molds, the firm says.

Our Identification No. 106

• Precast Joist Stirrups

Maximum fire protection for the top bar is one feature of specially-designed stirrups and chairs, wire form hangers for precast concrete joists made by *Automatic Spring Coiling Co.*, Chicago 30. The new stirrup centers the top bar for both T-beam and independent beam. A re-

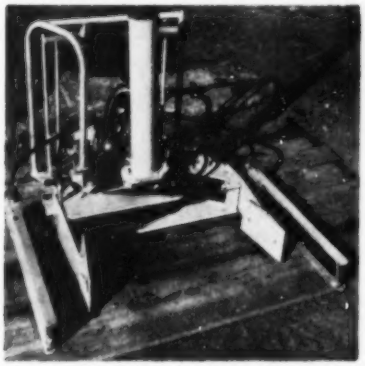


verse kink below the top bar keeps the vertical portion of the stirrup on the joist's center line, while the top projection has also been bent to keep it approximately on the center line. This is said to let you check quickly the accurate placement of the top bar and to insure non-interference with the placing of precast floor slabs.

Our Identification No. 107

• Cubing Clamp

Designed to handle almost every kind of shaped concrete block or brick now produced, a new cubing clamp has been developed by *F&M Engr. Service*, Alpena, Mich. Two sets of arms are furnished with each clamp, one having equalizer pads to handle all straight sided

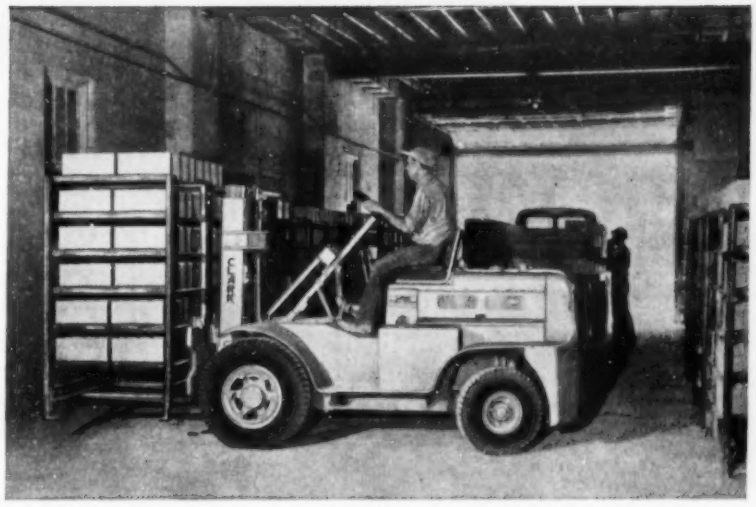


shapes, the other having air-expanded rubber tubes in the arms to handle irregular shapes or brick.

The F&M clamp is designed so that the arms do not hinge, but move parallel to each other. They will close onto a 16-in. wide block, and need no spacers or blocking to pick up 10-in. or chimney block, F&M says. They are mounted on rolling surfaces to reduce friction.

The clamp is pivoted so that the operator has no struggle in keeping the load parallel, according to the manufacturer. It can be tilted to lay the blocks tight in the cube.

Our Identification No. 108



"We've tried 'em all – and Clark's are easier to operate, require less maintenance," SAYS JAKE SEBERGER, SEBERGER'S CONCRETE BLOCK CO., GARY, INDIANA

Of necessity, owing to the tremendous weights involved, the manufacture of concrete blocks is a mechanized handling operation; and for Jake Seberger's money there's only one entirely satisfactory answer—Clark trucks. He operates three: 6000 lb. gas-powered Utilitrucs, one with pneumatic tires and power steering. He has three others, of different makes; but they're his "second team."

New blocks from the huge forming press (400 to 1600 per hour, depending on size) are placed manually on steel trays; then on racks —14 trays to a unit, weighing well up toward 6000 lbs; and moved into the kiln for 12-hour curing in low-pressure steam at high temperature. From the kiln, racks are taken to the shipping area for manual loading on trucks. Empty racks are returned to the block machine—a continuous cycle.

"These Clarks are the only ones for me," says Seberger. "Two of the Clarks are about 5 years old; and the only maintenance in all that time was replacement of one clutch."

You'll find Jake Sebergers in every kind of industry that handles materials—experienced men with a keen eye for savings, who have "tried 'em all" and want none but Clark.

Just as basic "good business," have a talk with your nearby Clark dealer, a competent counselor on the planning of handling methods engineered to your business. You'll find him listed in the Yellow Pages of your phone book.

CLARK EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
BATTLE CREEK 90, MICHIGAN

It's here!... You named it!

THE STEARNS 50-3

with every proven feature of the **Stearns 50**

Plus 3

8" EQUIVALENTS-PER-CYCLE

ON 18½" x 26" PLAIN STEEL PALLETS

★

100% Cam and Crank-Operated—No Temperamental Gadgets!
Continuous, Automatic, Trouble-Free Production
Of Highest Quality Blocks ! ! !

ABSOLUTELY
THE LOWEST BLOCK PRODUCTION COST
PER MACHINE DOLLAR ! —

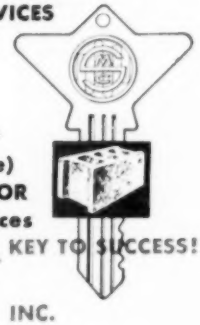
Ask Any Model 50 Owner.

★

AND—We are offering the Stearns 50-3 COMPLETE
WITH ALL STEARNS PATENTED PALLET-HANDLING DEVICES
for the Automatic Production of Concrete Masonry Units !

★

See your Stearns Representative for
EITHER a Model 50-3 (3-at-a-time)
OR a Model 50 (two-at-a-time), OR
Write—Wire—Or Phone Collect—For Details and Prices
on the New Stearns 50-3—STILL ANOTHER KEY TO SUCCESS!



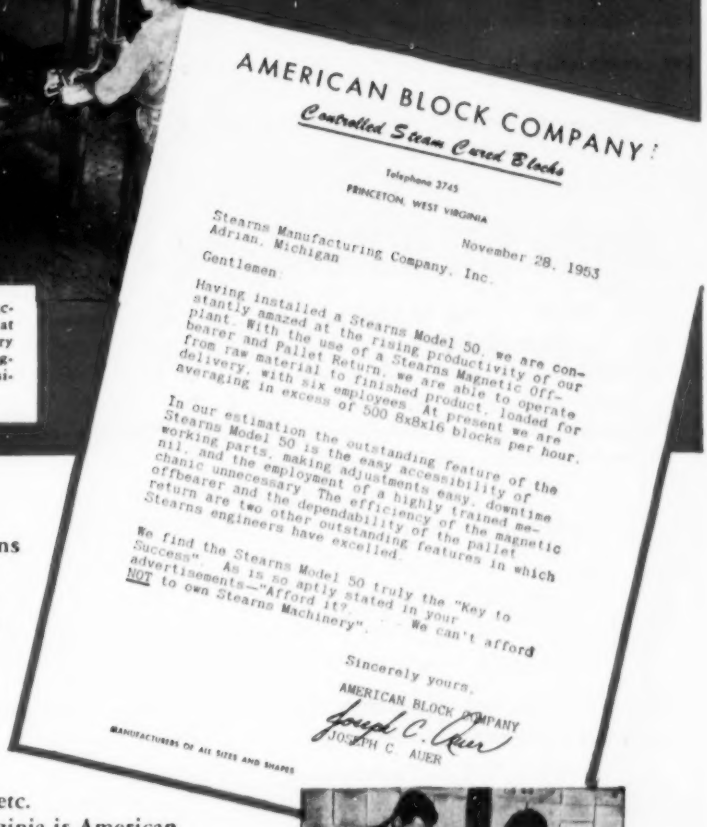
STEARNS MANUFACTURING COMPANY, INC.
ADRIAN, MICHIGAN

COMPLETE CONCRETE PRODUCTS PLANT EQUIPMENT

STEARNS 50

Working Parts So Easy-to-Get-at!

"We find the Stearns Model 50 truly the 'Key to Success'," says Mr. Auer. "We are constantly amazed at the rising productivity of our plant." Operator Harry Page, above, says running the efficient Stearns Magnetic Offbearer is a "pie" job. Note great accessibility of the 50's working parts.



AMERICAN BLOCK COMPANY
Controlled Steam Cured Blocks
Telephone 3745
PRINCETON, WEST VIRGINIA

November 28, 1953

Stearns Manufacturing Company, Inc.
Adrian, Michigan

Gentlemen:

Having installed a Stearns Model 50, we are constantly amazed at the rising productivity of our plant. With the use of a Stearns Magnetic Offbearer and Pallet Return, we are able to operate from raw material to finished product, loaded for delivery, with six employees. At present we are averaging in excess of 500 8x8x16 blocks per hour.

In our estimation the outstanding feature of the Stearns Model 50 is the easy accessibility of working parts, making adjustments easy, downtime nil, and the employment of a highly trained mechanic unnecessary. The efficiency of the magnetic offbearer and the dependability of the pallet return are two other outstanding features in which Stearns engineers have excelled.

We find the Stearns Model 50 truly the "Key to Success". As is so aptly stated in your advertisements—"Afford it? ... We can't afford NOT to own Stearns Machinery".

Sincerely yours,
AMERICAN BLOCK COMPANY
JOSEPH C. AUER

MANUFACTURERS OF ALL SIZES AND SHAPES

"We can't afford not to own Stearns Machinery," says Joseph C. Auer, sales manager and joint owner (with his father, L. M. Auer) of the new concrete block plant in Princeton, W. Va., which started production last May with a Stearns 50,* and, up to December 1, had turned out in excess of ¾ million perfect units. The plant is completely Stearns—Mixer, Skip, Offbearer, Pallet Return, etc.

Just a few miles away in Virginia is American Cinder Block, the parent company. Combined yearly production of the two Stearns plants will approximate 2½ million 8" equivalents.

*Stearns 50 Now Available *at No Extra Cost* for Use with Pallets 20 Inches Long for Even Greater Production!

Mr. Auer, left, and Basil R. Legg, his Princeton plant manager, never have to worry about the quality of their Stearns 50 units. They all pass with flying colors—block after block after block! Mr. Auer worked summers at the parent plant, the American Cinder Block Company, Rich Creek, Va., (which he also owns with his father) while attending Washington and Lee University. The plant employs a Stearns No. 9 Joltcrete. After college, he was sales representative for the Lone Star Cement Corp., Virginia Division, until his present position. Mr. Legg was assistant plant manager at the parent company until called to his present duties.

STEARNS
MANUFACTURING COMPANY • INC.
ADRIAN • MICHIGAN

BE SURE TO VISIT US at the NATIONAL CONCRETE MASONRY ASSOCIATION CONVENTION FEB. 7-11 WASHINGTON, D. C.
REMEMBER: STEARNS SUITE SHOREHAM HOTEL

Trade Literature

Cellular Concrete Units, made with Calsi-Crete, aerated calcium silicate hydrate, are described in this new folder. This lightweight material can be sawed, drilled, nailed, chased, etc. It resists fire and vermin, is insulating and soundproof. *Calsi-Crete* can be made into block, slabs, beams, lintels, and other building units.

Our Identification No. 109

An Exclusive Franchise protects your production of *Johnson* pre-cast concrete steps, this leaflet says, describing the patented system for producing modern stairs. Adjustable steel molds make 2-in. reinforced concrete treads, risers, runners, and platforms that two men can install without winches or machinery.

Our Identification No. 110

Featherweight Plaster Aggregate is lightweight, insulating, fire safe, crack-resistant, and ASTM-certified, says this brochure on "How to specify and use *Perlite*". Practical hints as to the causes of cracks in all sorts of plaster, and suggestions for their prevention, take up most of the 8-pages.

Our Identification No. 111

Lightweight Masonry Units for floors and walls, made with *Waylite,* are shown in this 24-page brochure. The expanded slag aggregate produces concrete units that are insulating, sound absorbing, strong, nailable, low in absorption, and low in cost. Technical details, installation information, and cross-sectional drawings that show all sorts of constructions are included.

Our Identification No. 112

Make Drain Tile with cement and aggregates and you make a better product than conventioanal tile, says this 8-page *Concrete Equipment Co.* bulletin. This drain pipe can be made in any locality, not just where clay is available. It costs less to produce and sells for less without jeopardizing your profits, the treatise points out. It describes the Champion drain tile machine, which can produce five tile per minute.

Our Identification No. 113

All Sorts of Concrete Problems can be solved by the use of Zack-O-Mix, says this *Concrete Weld Co.* flyer. The mix "welds" broken steps, feather edging perfectly; will form a new thin coat over worn out pavements; makes possible several construction short cuts; resists water and acid; and has several other virtues, according to the sheet.

Our Identification No. 114

Hand Cutters for use on reinforcing wires and steel up to ⅝ in. are shown in this *Manco* bulletin.

Our Identification No. 115

JANUARY 1954

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110

111 112 113 114 115

Please send more information on products shown in the Advertisement on:

Page____ Product____ Adv.____

Page____ Product____ Adv.____

In addition I would like information on:

Name____ Title____

Company____

Address____

City____ Zone____ State____

Warner's New Plant—

(*From page* 255)

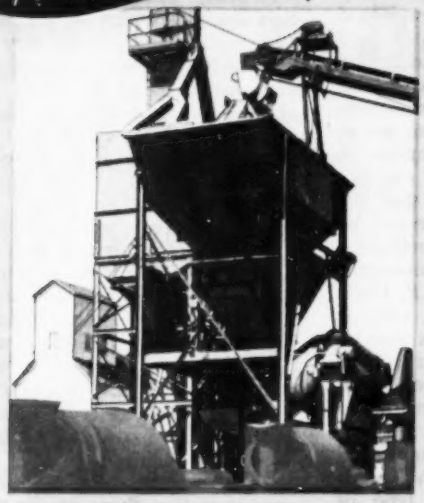
the brand, type, and characteristics of every carload of cement delivered to a Warner plant. Cement is tested at the source by E. L. Conwell & Co.

When the final details of the 51st Street concrete plant have been completed, there will be a separate laboratory room right on the batching floor to facilitate testing for control purposes. There will also be a separate dispatcher's office at ground level which will be connected by teletype with the company's Berks Street office, where all orders are received. Orders will then be received at the batching plant by teletype, placed on regular tickets, and then sent to the batching floor by means of a pneumatic tube system. Only after the ticket is filled and the order has been certified, will it be turned over to the driver who is to deliver the load.

The Warner Company has used the inspection service described here for a number of years and has found it to be an entirely practical and economical way to carry on ready-mixed-concrete operations. In extending the practice to its newest plant, the company has combined a tried and proved control system with one of the finest physical setups in the industry.

BURMEISTER'S THE BUY!

WET



BURMEISTER CENTRAL MIX PLANT WITH MIXER ENGINEERED TO THE PLANT

Here's a central mix plant that's *economy engineered*. The famous Burmeister Tilt-Up Mixer actually reduces plant height. This increases portability, lowers power requirements, means fewer buckets, shorter belts and boom for crane loading . . . substantial savings for the ready-mix operator. Mixers are available in 3, 4, 5, and 6 cu. yd. capacity; aggregate and cement bins, any capacity. Burmeister mixers are acknowledged as the most advanced in engineering for four important reasons: (1) their exclusive space-saving tilt-up discharge; (2) twin drive; (3) scientific "two-fold" action; and (4) hydraulic tilting mechanism.

DRY

BURMEISTER DRY-BATCH PLANTS FEATURE EXTREME PORTABILITY AND FLEXIBILITY

When you start with a Burmeister dry batch plant you enjoy a minimum initial investment and low erection and operating costs because of their simplified construction. You'll find you get fast, accurate batching. Standard equipment includes a large-capacity cement elevator. Other design features include: elevator drive mounted on head on large machinery platform; use of toggle clamps instead of cover bolts speeds disassembly at screw conveyors. Later, you can add a Tilt-Up Mixer that's engineered to the plant . . . your assurance of maximum efficiency, minimum cost.

Mail Coupon for Complete Details!

L. Burmeister Company
4531 W. Mitchell Street
Milwaukee, Wisconsin

☐ Please send me your complete catalog.
I am particularly interested in more information about ☐ wet ☐ dry plant operation.
☐ Please ask your representative to call on me.

Name_____

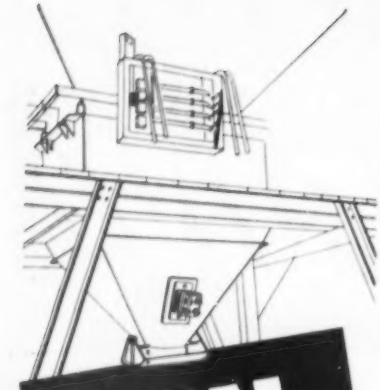
Company_____

Address_____

City_____ State_____

L. BURMEISTER CO., 4531 W. MITCHELL ST., MILWAUKEE, WIS.

Burmeister
COMPLETE PLANTS FROM A SINGLE SOURCE



BIN
STUCK LATELY?

Concrete products processing plants everywhere have found CLEVELAND air vibrators the solution to their arching, bridging and sticking problems.

With a CLEVELAND, materials move through handling devices efficiently and economically, thus cutting down production time and costs.

We have a size and type, either quiet or standard, to fit your requirements.

Write for our new catalog No. 109.

THE CLEVELAND VIBRATOR COMPANY

2710 Clinton Ave. • Cleveland 13, Ohio

High Pressure Curing—

(*From page* 250)

ing from 46 ft. to 100 ft. in length, their actual size is governed by the quantity of units to be cured per charge. The majority of autoclaves are of 78-in. diameter, primarily because they were formerly used in the sand-lime brick industry, and were later adapted to curing concrete products. However, on new installations producers have considered it economical to purchase autoclaves of such size as to accommodate their conventional block racks. . . . There are producers who report getting 96 units (8- by 8- by 16-in.) per rack for a 52-in. depth rack in a 78-in. diameter vessel.

Some of the important factors for consideration in the purchase of an autoclave, aside from the aforementioned size considerations, are as follows: (1) that requirements of local or state boiler code requirements be ascertained; (2) that the working pressure of the vessel be adequate; (3) that the autoclave be manufactured to meet requirements of Paragraph U-69, A.S.M.E. Code for unfired pressure vessels, with or without the Code stamp, as may be required by some city or state regulations; and (4) that the vessel will be insurable with standard boiler insurance companies.

An additional savings can be effected in labor cost with the installation of a quick-closing type of door at one end or both ends. The closing, locking, unlocking, and swinging open operations are performed by hydraulic or manually-operated methods, which affords an appreciable savings over the conventional bolted type of door. Safety features, gasket economy, and insulation of the vessels are also to be considered.

Generally, the inside of the autoclaves are fitted either with rails for cars which carry the molded product, or with a sub-floor for lift truck and pallet or rack operations. When the cylinders are filled to capacity, the doors are closed and steam is introduced. To save time and labor in removing cars from the cylinder after the steaming and cooling-off period, a cable may be placed the length of the cylinder floor, hooked to the end car, and the entire string of loaded cars can be pulled out by means of a small winch, lift truck, or tractor. This method eliminates the necessity of having a man enter the hot cylinder; it also conserves heat, as the door can be closed immediately after the cylinder has been emptied.

Autoclaves equipped with sub-floors enable an electric or motor-powered vehicle to place and remove racks from the vessel. Plants may be designed in a manner most suited to the economy of present location and available space. Production requirements will determine the number of autoclaves needed, just as it is considered in the number of block machines required to supply certain production quantities per day of operation.

We are at the cross-roads in our concrete masonry business today, where a sign with one indicator points to "Concrete Masonry Units" —straight ahead, just as we have been going. A choice to continue on that way means that we are satisfied with our business just the way it has been going; and so long as customers buy our product or don't know about a better quality product, we will just roll on down that road. Another indicator at the cross-roads reads, "Premium Quality Concrete Masonry Units Turn here." Many concrete masonry manufacturers are turning their interest in that direction because they have an appreciation for their business and the customers they serve who make that business possible. They are making the quality of product now that constitutes the foundation of our industry, and they will investigate methods and procedures for making a better product.

As for adding autoclave curing to your operation, there are the numerous advantages offsetting the cost of an installation which have been outlined, to which we add the following: savings of increased frequency of capital turn-over; lower working capital investment; smaller yard space; ability to deliver material for large jobs in a short time; and lower handling costs, as deliveries can be made directly from the kiln with only one handling. However, most important of all is to protect the investment that you already have by making a better quality product.

Phoenix Firm Ups Output After Move to New Plant

Operations of the Concrete Conduit Company, Phoenix, Ariz., are now conducted in the firm's new plant, located on a 40-acre tract on Buckeye Road. With the new facilities, 3,000 ft. of pipe can be produced per day.

Products of the plant are irrigation, sewer, and steel-reinforced centrifugal pipe; headgates; storm drains; and culverts. Officials include the following: H. R. Cooper, assistant manager in charge of production; Ted Schmidt, irrigation pipe sales manager; Charles Scruggs, office manager; Evert Parks, field superintendent; and Carl McPherson, engineer.

Production Reviews—

(From page 244)

1953 marked the shift from a seller's to a buyer's market. Since 1944, when the production of concrete pipe totaled about 3,500,000 tons, output had increased at the rate of almost a million tons per year. While there is no reason to regard 11,000,000 tons of annual output as an absolute ceiling, nobody in the industry has seriously believed that the postwar rate of gain could be sustained indefinitely.

The industry appears to be well aware of the buyer's market ahead. One of the most serious matters which will engage the attention of the board of directors of the American Concrete Pipe Association during their meeting in San Francisco next month will be a broadening of the organization's promotional program to include local activity. Regional association activity within the industry has accelerated greatly in the last few years, and this trend will undoubtedly become an increasingly important factor in helping producers to cope with more vigorous competitive selling.

In respect to technical developments, 1953 was a fairly quiet year. Work progressed on several important research projects sponsored by the industry's association, but no major undertaking of this character was brought to completion during the year. While nothing occurred in 1953 to revolutionize practices and procedures in the pipe industry, several important trends were noted: rubber coupling joints came into almost universal acceptance for sewer and culvert work; there was much greater use of fly ash as an additive to mixes to make more workable, stronger, and more durable concrete; the long-range trend toward pipe of larger diameter continued at an accelerated pace; and there was much wider use of new reinforcement cage designs involving the hanger principle in the manufacture of large-diameter cast pipe.

From any point of view the future prospects of the concrete pipe industry look good. The industry's house is in order, its plants are in the finest physical condition in history, and its products enjoy an enviable reputation wherever they are used. Barring a wholly unforeseeable slump in the general level of construction activity, the industry in 1954 should maintain the same high level of output enjoyed for the last several years. Further gains are not out of the question, but they will come only as the reward for hard work.

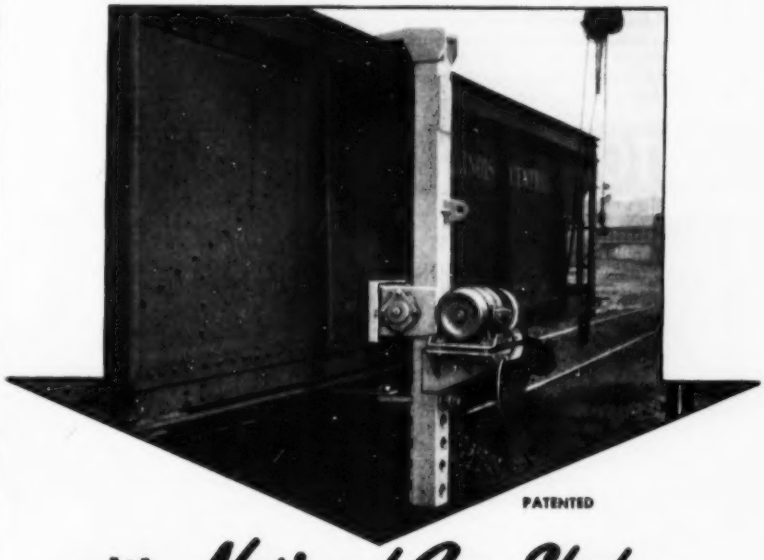
Texcrete Co. Forms Combine With Ft. Worth Sand-Gravel

The Fort Worth Sand and Gravel Company and Texcrete Company of Fort Worth have now launched a combined operation according to an announcement made jointly by Ralph B. Rogers, president of Texas Industries, and T. E. Popplewell, head of Fort Worth Sand and Gravel.

The election of George A. Meihaus, formerly president and general manager of Texcrete of Fort Worth, as a vice-president of Fort Worth Sand and Gravel Company was also announced. Mr. Meihaus, whose primary activity will be in sales and distribution, joins an executive staff which includes Mr. Popplewell, Charles E. Marshall, executive vice-president, and John C. Stewart, sales manager.

The Fort Worth Sand and Gravel-Texcrete organization will offer ready-mixed concrete, Texcrete concrete masonry units, masonry paint, crushed stone, sand and gravel, lightweight aggregate, Sakrete pre-mixed concrete, cement, plaster, metal lath and accessories, form ties, metallic floor finishes, expansion joints, and a complete line of specialty items for concrete construction.

Quicker, Cheaper Unloading



with *National Car Shaker*

Hundreds of National Car Shaker installations have PAID FOR THEMSELVES through big unloading savings. Many users say that they save up to 80% on unloading costs!

One man can unload coal, coke, cinders, sand, stone, aggregates or other bulk materials *in a few minutes*, under normal conditions. National Car Shaker eliminates the dangerous part of unloading work, as men are not needed in or on cars.

WRITE TODAY for full information, prices and descriptive literature on the LOW COST National Car Shaker.

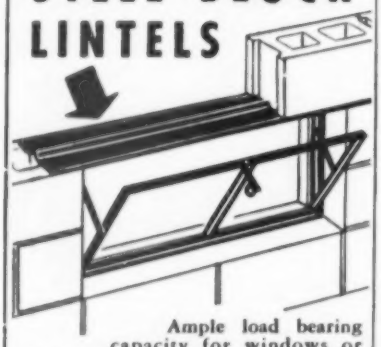
National Conveyor & Supply Company

348 N. HARDING AVENUE **CHICAGO 24, ILLINOIS**

For better, stronger window installations

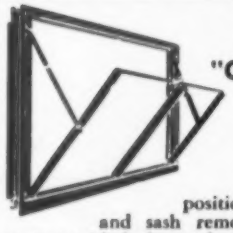
VENTO

STEEL BLOCK LINTELS



Ample load bearing capacity for windows or doors. Available from 2-ft. 6-in. to 5-ft. Formed from 10 gauge hot rolled steel with stiffening crimp in center. Beveled edge provides masonry bond and seat for mortar. Saves costs through use with standard 8-inch blocks. Vento pressed steel angle lintels for brick construction also available.

VENTO STEEL BASEMENT WINDOWS



VENTO "CHAMPION"

Three sizes. Effortless operation gives three position ventilation and sash removal. Double contact with leak-proof water-shed sill stops wind and rain. 14 gauge electric welded frame. Fins welded to jambs for easy installation in block or poured walls.

VENTO "THRIFTY"

A real economy window for lower cost housing. Three sizes, sturdy construction, smooth operation, two position ventilation and easy sash removal. Fin flanges at jambs for quick installations.

***Also** casement, utility and barn windows. Write for full information.*

VENTO STEEL PRODUCTS CO., INC.

754 COLORADO AVE. BUFFALO 15, N.Y.

Trade Notes

The appointment of F. E. Bennett Company, Portland, Oreg., as MAGCOA sales representative in Oregon, was announced by Walter R. Gow, dealer manager, Magnesium Company of America, Materials Handling Division, East Chicago, Ind. Mr. Gow stated that the appointment represents another step in the expanding sales organization of MAGCOA, the country's largest manufacturer of magnesium-materials-handling products. F. E. Bennett Company will handle a complete line of MAGCOA products, including dockboards, yard ramps, hand trucks, and roller conveyors.

Landers-Segal Color Company, a Brooklyn, N. Y. concern which manufactures dry colors, has announced the appointment of the Midwestern Sales Company of Kansas City as its sales representative for Missouri, Kansas, Iowa, South Dakota, and Nebraska. This firm will handle the sale of cement and mortar colors in bulk and in packages to concrete product manufacturers, ready-mix plants, and building material dealers.

H. R. Marriott, Jr., was recently promoted from assistant sales manager to sales manager at the Mobile, Ala., operation of the Ideal Cement Company. At the same time M. O. Matthews, Jr., became assistant sales manager. Mr. Matthews was formerly Ideal's Mississippi salesman.

● A new type of concrete pipe suitable for culverts and watertight sewers has been developed after several years of experimenting by Sam R. Locke of Mexico, Mo. This pipe is a split elliptical unit in which the two halves of the pipe bolt together, forming a single rigid monolithic concrete structure. The steel forms for pouring have been simplified until the time required to set reinforcing and assemble the forms is no greater than in conventional round pipe. The clips which bolt the two halves together are heavy enough to take any strain and are tied in with the pipe reinforcing. The pipe are said to compare favorably in strength with conventional pipe. Advantages claimed include ease of handling forms and also of large-diameter pipe in halves instead of in whole sections.

Appointment of William T. McCormick, as advertising manager, Building Products Division, was announced recently by Alex Rubin, general manager, Building Products Division, L. Sonneborn Sons, Inc.

Before joining Sonneborn, Mr. McCormick was with the advertising and sales promotion department of the Mergenthaler Linotype Company, and prior to that he was editorial chief for the New York office of Montgomery Ward and Company.

● Maintenance and operations men from industry attending a session of the Clark Equipment Company Mobile Service School. Equipment for the school, including exhibits shown along the sides and front, are transported in a specially constructed over-the-road tractor-trailer unit. Designed to offer advanced service and maintenance training in the customer's "back yard," the school was organized by the Service Division of Clark Equipment Company in co-operation with the dealer organization. During the first two years of operation it is expected that the school will be attended by more than 5,000 men in its nation-wide tour of 20,000 to 25,000 miles.

Botched Batches

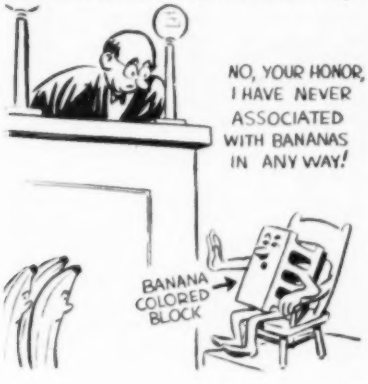
Damning With Faint Praise

THE caption which we received with the accompanying photograph asserts that the two young ladies pictured are the "world's most beautiful lift-truck operators." Ordinarily we take a dim view of such pragmatic pronouncements, but we're inclined to accept this particular bit of dogma on the grounds that in

more than a decade of extensive field travel we haven't yet caught up with even one outstandingly cute lift-truck operator. Even from a detached view, which isn't altogether easy to maintain, it strikes us that the Buda nominees could give an excellent account of themselves in a considerably more crowded field of competition.

Yes, We Have No . . .

SOME while ago this department reported that a brick and tile manufacturer was turning out his products in such romantic hues as Valencia treebark, suntan, earth blend, and banana. The last-named color must have a great deal of appeal, judging from the number of inquiry cards we've received from readers who want to know the details of the process. Like a flash we launched a broad research program which has to date established beyond a shadow of a doubt that the effect is *not* achieved by any technique involving the use of bananas.



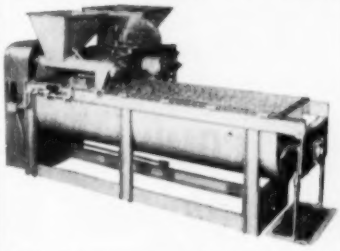
Prosperity Note

WE UNDERSTAND that the burglars who broke into the premises of the Columbia Concrete Company of Des Moines, Iowa, made off with five bottles of liquor and $2 in cash. Although we're delighted to note this convincing testimony to the prosperity of the concrete industry, it strikes us that *this* particular outfit may be straining a little too hard to maintain a liquid position.

Forecast

SOME unidentified hero has figured out that the world's yearly output of portland cement is sufficient to pave a road 150 ft. wide and eight in. thick around the equator. Not to be outdone, we have figured out to our own satisfaction that if only two cars were in operation on that hypothetical road, they'd both be involved in smashups before the end of the week.

Jones (formerly Yoder)
CONTINUOUS MIXER



Embodies many successful new features, such as positive, non-clogging, vibrating belt feed, insuring constant volume of aggregate regardless of moisture content—no need for costly weighing equipment and moisture determinations.

Accurate proportioning through adjustable aggregate gates. Variable Speed drive for requirements ranging from 5 to 20 cu. yds. per hour. Cost only half that of batch mixer. More thorough mixing —gives up to 50% higher strength than 5-minute batch mix. Special advantages for lightweight aggregates. Illustrated literature and other information on request.

J. A. Jones CONCRETE MACHINERY
108 Horning Road, Pittsburgh 34, Pa.

Fast, Low Cost Controlled Concrete Curing With
SERVICISED
CURING COMPOUNDS

- Provide lowest unit of moisture loss
- Each type meets official specifications
- "Stay put" on vertical surfaces—won't run leaving bare, untreated areas

3 types:

1. white PIGMENTED
2. CLEAR
WAX-RESIN AND RESIN BASE TYPES
3. SEPARATION (ANTI-BOND)
FOR TILT-UP AND PRE-CAST CONCRETE CONSTRUCTION

Servicised Concrete Curing Compounds are made in our own plant under rigid laboratory control and are guaranteed by us to be uniform in quality and results. There is a Servicised Curing Compound for every requirement. Write for the new Servicised Concrete Curing Compound circular which describes the complete line.

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6051 W. 65th STREET • CHICAGO 38, ILLINOIS

YELLEN
HI-SPEED
BLOCK MACHINE
PERTH AMBOY, N.J.

COMING
FOR '54
A NEW
YELLEN HI-SPEED
PLAIN PALLET
BLOCK MACHINE

The same simple design, construction and operation. One man operation.

NEW LOW PRICE

Memphis, Fresno Plants Win N.R.M.C.A. Safety Awards

In an announcement released by the National Ready Mixed Concrete Association, the results of the 1953 safety contest were summarized, as follows:

Class A — The Fischer Lime & Cement Company, Memphis, Tenn., was the winner for the second consecutive year among contestants producing more than 100,000 cu. yd. of concrete during the contest period. This plant was operated for the 12 contest months without a single injury to employees or non-employees, and with only five property damage accidents. Accordingly, it will receive the PIT AND QUARRY plaque at the annual convention of N.R.M.C.A. next month.

Class B — Stewart & Nuss, Inc., Fresno, Calif., whose plant also completed the contest year with an accident-free record, will be awarded the PIT AND QUARRY plaque for ready-mix operations in the 50,000-to-100,000-cu.-yd. class. Although two other firms in this group also achieved injury-free records, Stewart & Nuss won the award by reason of the largest output. These two companies, Gerlach Builders Supply, Inc., Topeka, Kans., and Morse Sand & Gravel Company, Inc., Attleboro, Mass., will receive Certificates of Achievement in Safety.

Class C — Certificates will also be awarded to 48 concerns in the Class C competition (operations producing less than 50,000 cu. yd. of concrete during the year) for accident-free 12-month operation; and the Beckley & Myers Company, Springfield, Ohio, will receive the Class C trophy.

A.C.I.'s 50th Anniversary To Be Celebrated at Denver

The American Concrete Institute will celebrate its Golden Anniversary at its 50th annual convention in Denver, Colo., from February 22 to 25. Commemorating 50 years of service to the concrete engineering field, the convention will feature sessions devoted to the latest developments in structural design, precast and prestressed concrete, and research on materials and properties of concrete.

A special session will feature addresses on the use of concrete by the construction industry and government agencies by W. A. Dexheimer, Bureau of Reclamation, U. S. Department of the Interior; Rear Admiral Joseph F. Jelley, Department of Defense; Norman P. Mason, Chamber of Commerce of the United States; and Major General Samuel D. Sturgis Jr., Chief of Engineers, U. S. Army.

A new standard on design and construction of concrete chimneys, submitted by A.C.I. Committee 505, and one on recommended practice for selecting proportions for concrete (mix design), submitted by A.C.I. Committee 613, will be presented for adoption. The American Concrete Institute-Portland Cement Association film, "How to Transport, Place, Cure, and Finish Quality Concrete", will also have its premier showing at the convention.

Michigan R.M.C. Association Holds 2nd Annual Meeting

The second annual conference of the Michigan Ready Mixed Concrete Association was held on December 10 and 11, 1953, at the Kellogg Center for Continuing Education at East Lansing, Mich.

At the banquet on December 10 Paul Bagwell, head, Communication Skills Department, Michigan State College, delivered the main address, which was entitled "The American Way". Panel discussions were held on the following topics: the responsibility of the ready-mix producer to his customer, what the dispatcher and truck driver can do to promote ready-mixed concrete, and general production problems.

Officers of the association are as follows: president, George Whyel, J. P. Burroughs & Son, Flint; vice-president, Donald Boichot, Boichot Concrete Products, Lansing; treasurer, Bud Winkworth, Winkworth Fuel & Supply Company, Detroit; and secretary-manager, J. Revell Hopkins, Lansing.

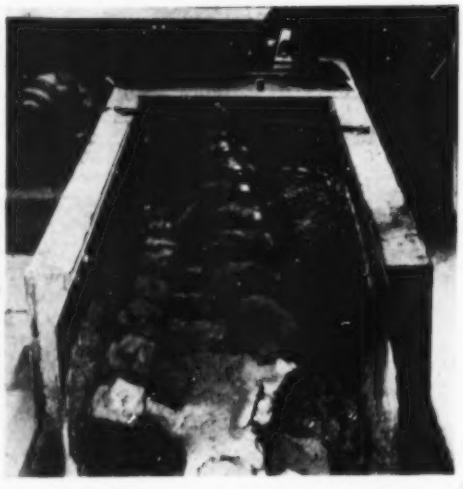
Dwight G. DeHaven, sales engineer at the Portland, Oreg., headquarters of Smithwick Concrete Products since 1950, was recently promoted to the post of general manager of the Eugene block plant, in charge of the southwestern Oregon area. He will be assisted in sales by Larry Norby, who has represented Smithwick in a sales capacity for the last three years.

3 Big ADVANTAGES of the ANTHONY Continuous Mixer

1. Power requirements are actually less than 1/5 that of batching operations. No "peak" loads involved. No great weight of material in trough.

2. Minimum blade wear because of light loads in trough. Low replacement costs.

3. Replacement of trough often not required for 20 years, even if material is highly abrasive.



One of two No. 1530 ANTHONY Mixers in operation at plant of Grays Ferry Brick Co., Conshohocken, Pa.

Inquiries are welcomed from distributors to serve as territory representatives.

Write Today for Bulletin

CONSTRUCTIONAL FEATURES: Completely adjustable blades—64 in one mixer. 12 foot standard replaceable mixer trough. All welded, heavy steel plate frame. Mixer will handle any dry or semi-dry material. Five sizes available.

THE W. A. ANTHONY ENGINEERING CO.
2819 Detroit Avenue, Cleveland, Ohio • Phone: Cleveland, Ohio—Cherry 1-6308
Engineers and Designers of —
Moisture Determination Equipment • Constant Volume Feeders • Conveying Equipment

You'll Find The Ideal Construction and Operational Features In The ... New KEN TWIN BLOCK MACHINE

SEE US AT THE SHOREHAM
when at the N.C.M.A. Convention
Feb. 9th, 10th, 11th

An Advanced, Simplified Plain Pallet Machine

Featuring:

AUTOMATIC, CONTINUOUS CYCLING. Makes two 8" blocks or equivalent; or brick each cycle. Will produce all shapes of building block used today.

ONE MASTERBOX. Low cost insert molds are easily interchanged inside.

RUGGEDLY BUILT FOR LONG SERVICE. Liberal size, quality steel members throughout.

SIMPLIFIED HYDRAULIC OPERATION, DIRECT ACTING CYCLINDERS. Cams, gearing and levers eliminated for positive, smooth action.

EASY TO CLEAN AFTER DAY'S OPERATION.

CAN BE EQUIPPED WITH AUTOMATIC PALLET RETURN AND ELECTRO-MAGNETIC OFF-BEARING HOIST. (Not shown in photograph.)

SYNCHRONIZED, DUAL MOTOR VIBRATION READILY ADAPTABLE TO YOUR PALLETS.

POSITIVE BLOCK SIZING WITH ELECTRIC CONTROL.

HEAVY DUTY, ANTI-FRICTION BEARINGS USED THROUGHOUT.

FLOOR LEVEL INSTALLATION, NO PIT REQUIRED.

In keeping with our policy of designing and building concrete products machinery best suited to the specific requirements of our friends in the field, we are pleased to announce the New KENTWIN Block Machine.

It incorporates all the important features, improvements and refinements developed during our 27 years of specialization.

CANADIAN DISTRIBUTOR
WETTLAUFER EQ. LTD., TORONTO, ONT.

Use This Handy Coupon To Get Complete Information and Prices

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO
Manufacturers of
CONCRETE PRODUCTS MACHINERY SINCE 1925

Send KEN TWIN Block Machine Literature to

Name _____

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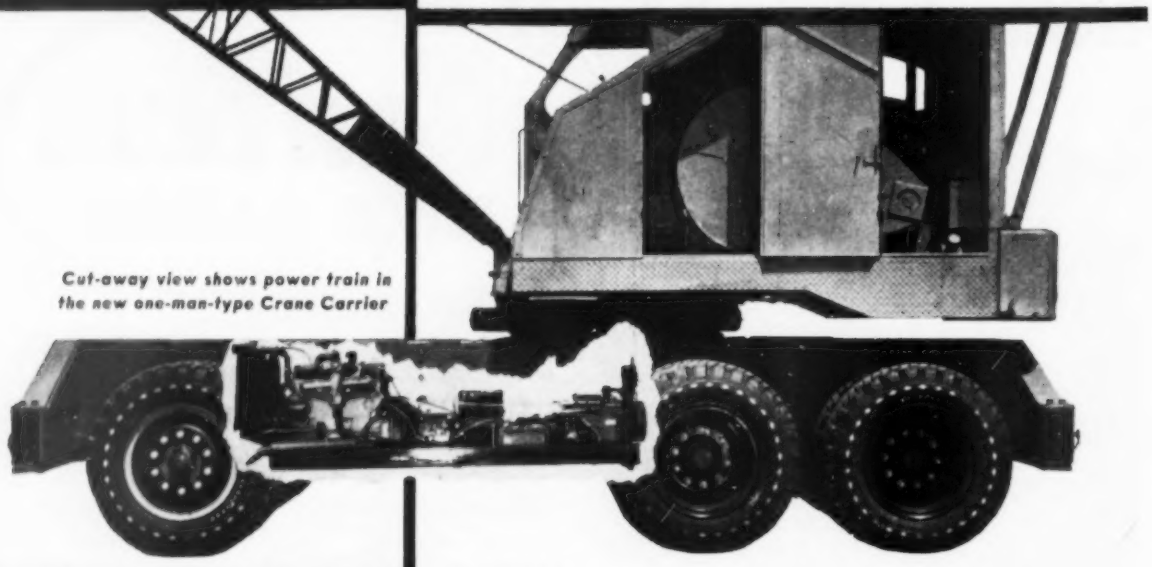
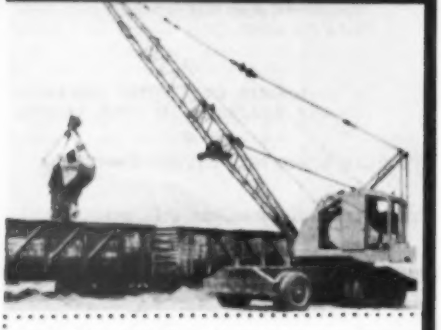
NEW COOK CRANE CARRIER

ONE-MAN-TYPE FOR 25-TON CLASS



Cut-away view shows power train in the new one-man-type Crane Carrier

Independent Power PERMITS INDEPENDENT TRAVEL AND SWING



PLUS:

POWER STEERING • SHORT TURNING RADIUS • AIR BRAKES TORQUE CONVERTER WITH 6 SPEEDS FORWARD AND 2 REVERSE STABILITY • GREATER FLOTATION, TRACTION AND GRADABILITY ROAD SPEEDS AND DRAWBAR PULL FOR ALL OPERATING CONDITIONS

Move The Carrier — Operate The Crane Both At The Same Time *With One Man!*

That's the big feature of the new, one-man type, Cook Crane Carrier . . . a combination self-propelled and truck type! . . . designed specifically for all make cranes in the 25 ton class; and trench hoes and shovels in the ¾—1 yard class.

In addition, this great new carrier features hydraulic power steering and air brakes, yet without air or oil lines between carrier and crane. All carrier controls are by mechanical linkage. Investigate this new unit now . . . available as either new and original equipment or for mounting used machines.

Cook Bros. Equipment Co.
Crane Carrier Division

Gentlemen:
Please send complete, detailed information regarding your new crane carrier to:

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____

COOK BROS. EQUIPMENT COMPANY
3334 San Fernando Road, Cleveland 5-3151
Los Angeles 65, California

Crane Carrier Division

NOW! COLUMBIA'S Newest PROFIT MAKER ...makes drain tile more than 5 times faster...

Columbia's 12-HIGH COMBINATION
DRAIN TILE AND BLOCK MACHINE

a precision-built, fully automatic machine that quickly converts to tile or block production.

ANOTHER *Columbia* FIRST

FIRST to give you drain tile and concrete block production in one machine . . . FIRST to answer the need for fast drain tile production . . . FIRST to meet the demand of the expanding drain tile market! Here is the machine that leads the field in versatile production of concrete products!

WRITE TODAY

. . . for complete information. See how you can boost profits, give your plant a competitive advantage, unheard of before in the block and tile industry, with the installation of Columbia's combination drain tile-concrete block machine!

Available on lease-purchase or outright sale.

***District Offices:* Wisconsin, Ohio, South Carolina, Mississippi, Florida, New Jersey, Virginia and California.**

Columbia MACHINE

***Home Office:* 107 S. GRAND, VANCOUVER, WASHINGTON**
Factory Branch and Warehouse at Mukwanago, Wisconsin

Columbia MACHINE
107 S. Grand • Vancouver, Washington

Gentlemen: Please rush me complete information on the new Columbia combination 12-high, tile-block machine.

NAME _____

ADDRESS _____

CITY _____ ZONE STATE _____

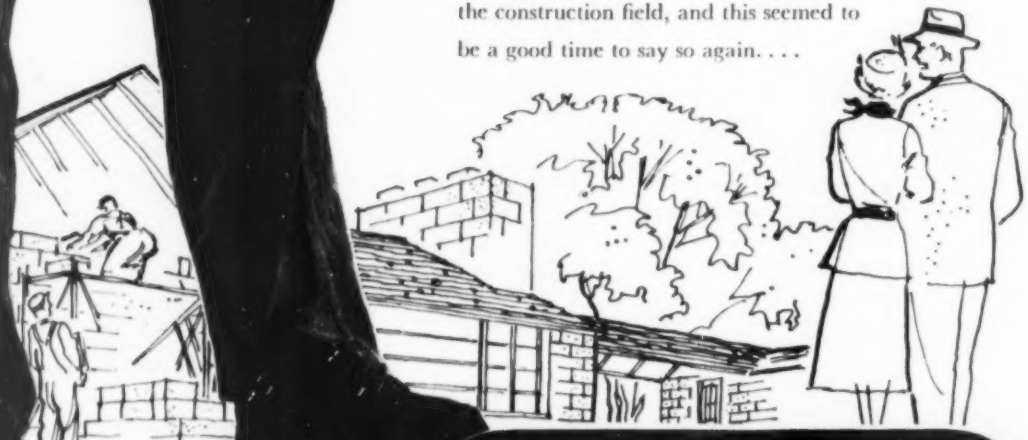
A SALUTE TO THE

Concrete Masonry Industry

ON ITS SEVENTH SUCCESSIVE

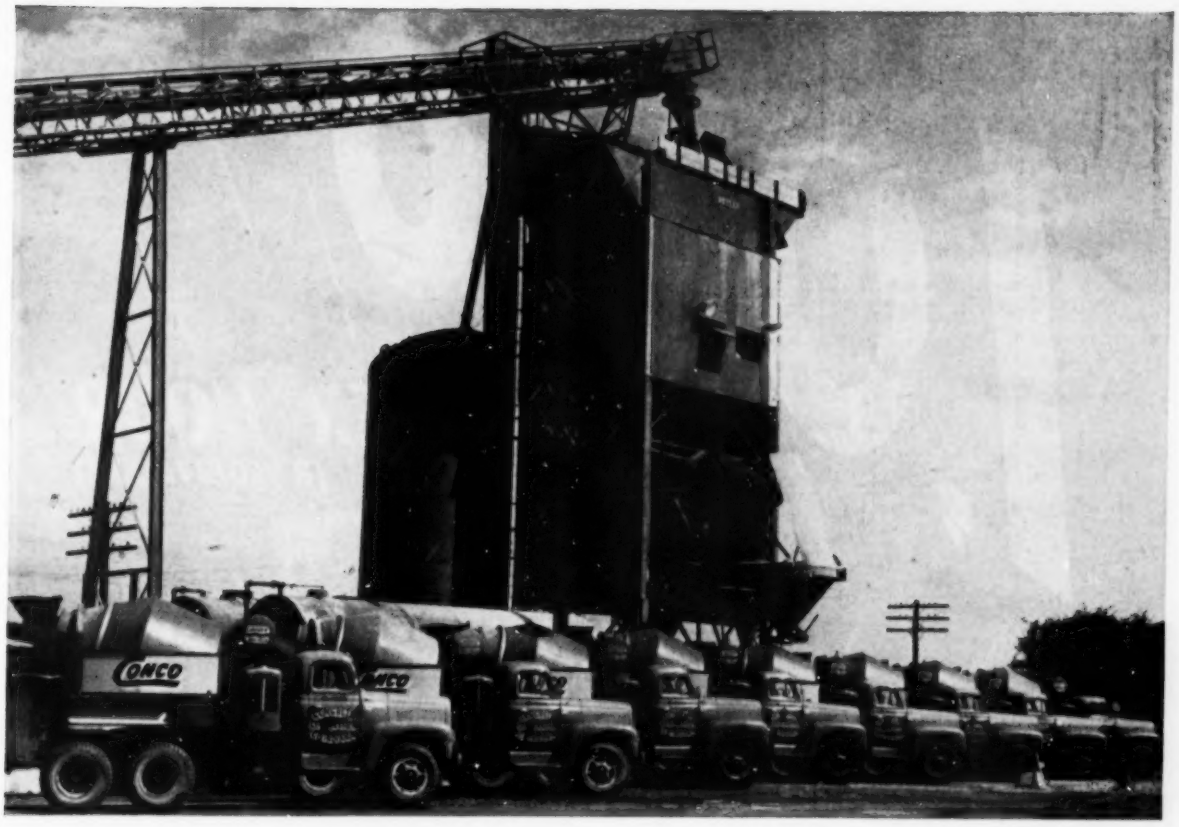
BILLION-PLUS YEAR

The remarkable record of the Concrete Masonry Industry during the past seven years in producing the equivalent of over Nine Billion sq. ft. of 8" Masonry Wall Units has few parallels in building industry history. . . . This production has been equal to about two-thirds of all masonry walls built in the United States during this period. . . . This unprecedented growth of the Concrete Masonry Industry has been the direct result of the quality, utility and economy of concrete masonry walls, and the superior service of progressive locally-owned companies. . . . The Waylite Company is proud to be a part of such an outstanding industry in the construction field, and this seemed to be a good time to say so again. . . .



WAYLITE

MASONRY UNITS



Above photo shows 8 of Conco's 10 new Jaeger mixers

New plant uses 10 Jaegers

to speed payload trips

The Indianapolis plant of the Concrete Corporation of Indiana is a completely modern operation. Cement is received by rail spur; aggregates are economically trucked in from a nearby source. The Butler-built plant is designed for wet-mix operation. Materials are pre-mixed by a Smith 3-yard drum, then end-loaded into a fleet of 10 Jaeger 4½ HMD truck mixers for agitating in transit.

The mixers are compactly mounted on 175" wheelbase Series 192 International trucks with specially equipped front axles. Each is equipped with sealed end loader, high pressure water system with 100 gallon metering flush tank, and the latest type Super-Comatic shock-proof transmission.

Dee Thompson, Conco's president, based his selection of Jaeger mixers on his more than 15 years of ready-mixed concrete experience. "In that time," Dee Thompson says, "you not only learn how different truck mixers stand up in service, you also learn what operating features help to maintain high daily payload.

"Our operation calls for a sealed end-loader. With Jaegers, we have no hopper seal problem. Both our charging and discharge time average extremely fast. Jaeger's high pressure water injection system saves us valuable time when tempering is needed, and having 5 different lengths of chute up to 13 ft. is a real help in placing concrete where customers want it. We've already added 2 more Jaegers to our original 8 — and we've just started to grow."

Conco officers Wolford T. Gradison, sec'y treasurer, and Dee Thompson, president.

There's a Jaeger "Mix Plus" model to fit any type of dry-batch or wet-mix operation and payload requirement. Check with your Jaeger distributor, or write us for Catalog TMH-3.

THE JAEGER MACHINE COMPANY

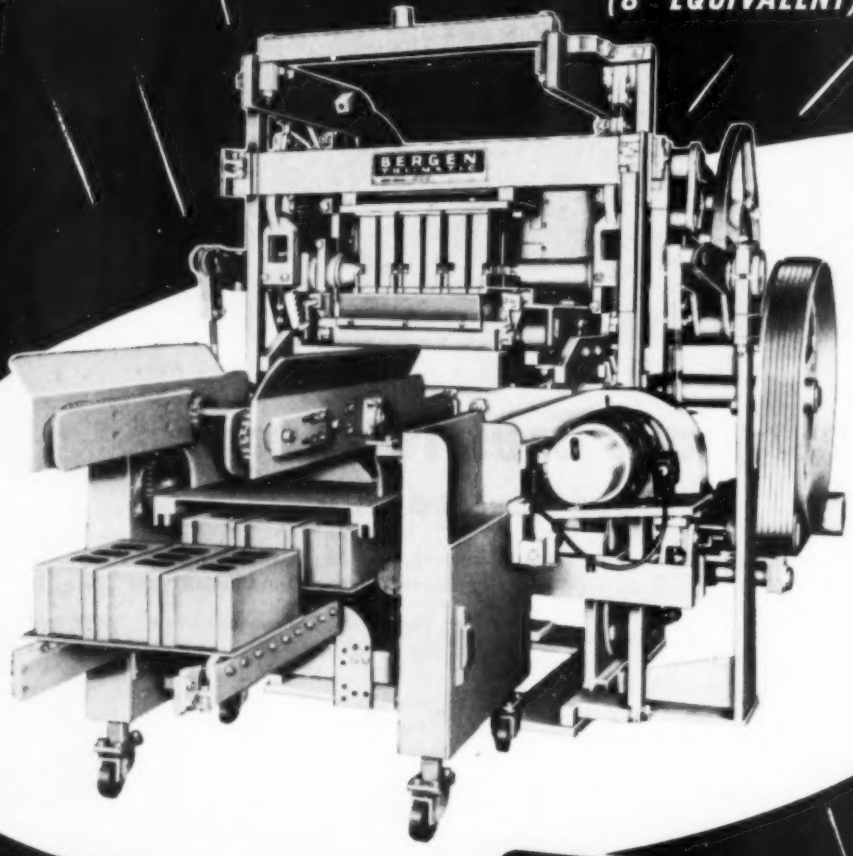
602 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • TRACTOR LOADERS • PUMPS • CONCRETE MIXERS • PAVING MACHINES

1,000

BLOCK PER HOUR

(8" EQUIVALENT)

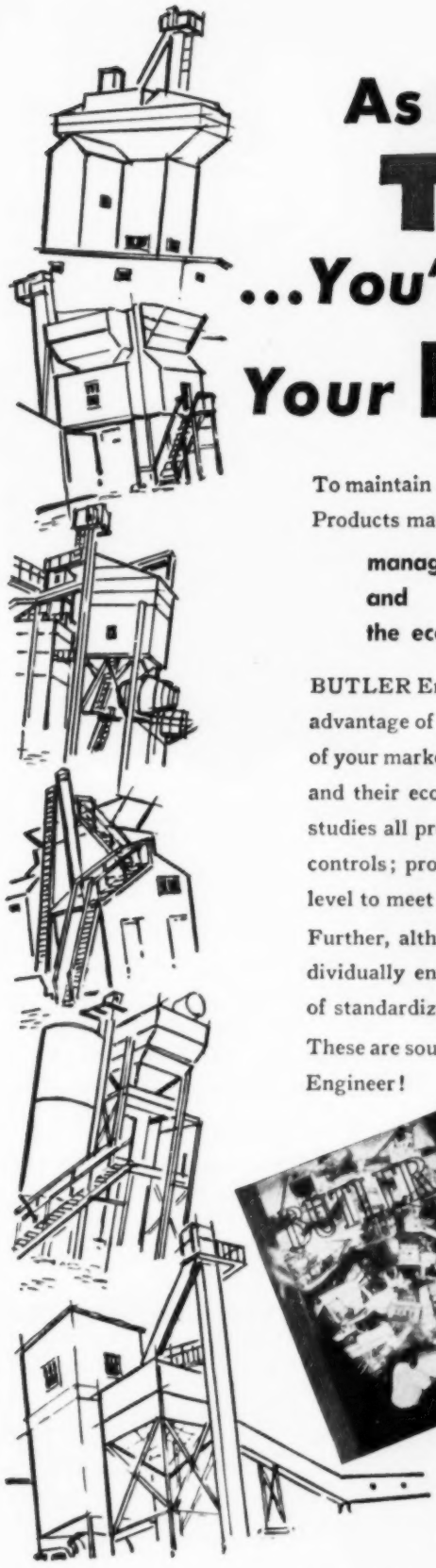


BERGEN
TRI-MATIC

AVAILABLE 3 WAYS
- ON LEASE BASIS
- LEASE with OPTION TO BUY
- OUTRIGHT SALE

Write for literature

BERGEN MACHINE & TOOL CO., INC., NUTLEY, N. J.



As Competition Gets TOUGHER ...You'll Really Appreciate Your BUTLER Plant

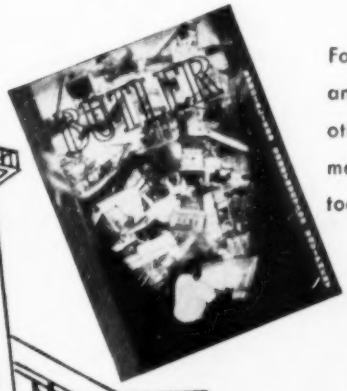
To maintain a good profit level in a competitive Ready Mixed or Concrete Products market, two things are required:

management know-how
and
the economy and efficiency of a BUTLER Engineered Plant.

BUTLER Engineering starts at the grass roots — your plant site, to take advantage of its terrain. BUTLER Engineering makes careful evaluation of your market and potential for growth as well as availability of materials and their economical transport. And of course, BUTLER Engineering studies all problems in flow of materials, labor saving through automatic controls; production simplicity — all at the lowest practical investment level to meet your customers' service requirements.

Further, although every BUTLER Plant is intensively studied and individually engineered, great economy is obtained by using components of standardized Butler manufacture.

These are sound reasons why your wisest move is to consult the BUTLER Engineer!



For a showing of BUTLER Ready Mixed Concrete Plants and BUTLER Concrete Products Plants together with other materials handling equipment which BUTLER makes, write for Bulletin 260. Send a postcard — today.

BUTLER BIN COMPANY
987 BLACKSTONE AVENUE
WAUKESHA, WISCONSIN

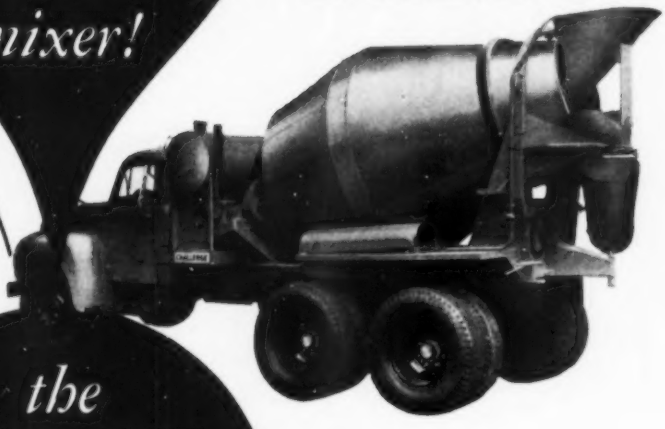
for bigger loads!

bigger profit!

another great, new **CHALLENGE** *mixer!*

the **CHALLENGE** $5\frac{1}{2}$ *yard mixer*

CHALLENGE . . . the one and ONLY complete line of truck mixers on the market . . . designed and engineered to serve the needs of the Ready-Mixed Concrete Industry.



See The Challenge Exhibit, Booth #67
N.R.M.C.A. Convention, Feb. 15-19

Member T.M.M.B.

It's the mixer you've been waiting for . . . legal in most states with full capacity, 5½-cu.-yd. payload . . . for use on standard 3-axle trucks of the same wheelbase currently required for many competitive 4½-yard mixers.

The new 5½-yard Challenge incorporates ALL the same high standards of quality and lightweight, rugged construction features made famous by Challenge.

Get complete information TODAY!

COOK BROS. EQUIPMENT CO.
Please send further information on the new 5½ yard Challenge, together with information on the size truck needed for use in my state.

NAME_____

COMPANY_____

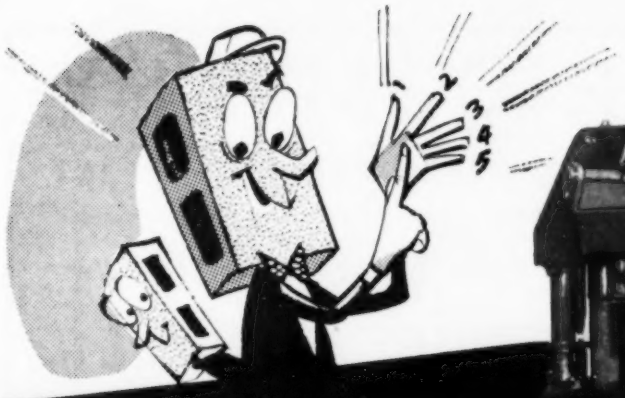
ADDRESS_____

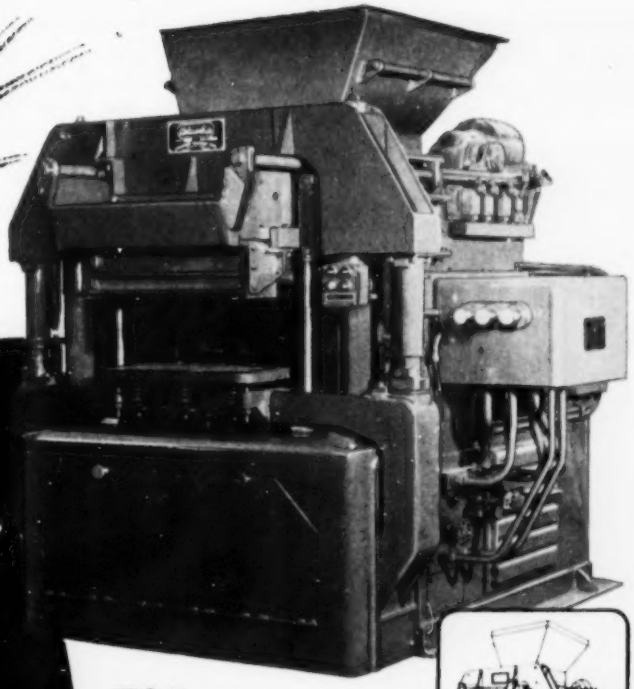
CITY_____ STATE_____

CHALLENGE SETS THE STANDARD FOR THE *Industry*

COOK BROS.
EQUIPMENT COMPANY

Exclusive National Distributors For Challenge . . standard of the industry





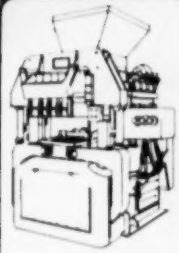
5 REASONS FOR *Columbia's* WORLD-WIDE ACCEPTANCE

1. Highest quality production!
2. Most flexible machine—with half the moving parts!
3. Electronic height control guarantees dense precision block!
4. Amazingly low purchase price!
5. 15-minute mold change!

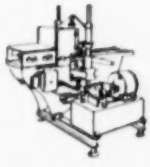
TOP PERFORMANCE

WITH COLUMBIA'S 3-BLOCK MODEL 12

Columbia performance includes fully-automatic, hydraulic operation ... production of 5 to 6 pallets of block per minute ... more production from less floor space—only 96 square feet for this three-block machine ... all moving parts enclosed for easier maintenance and greater safety.



Columbia Model 8, fully-automatic 2-block machine for fast, high-quality controlled block production.



Columbia's semi-automatic or fully automatic block splitter produces fast, clean-cut precision masonry units.

Columbia's batch mixer features a covered gear and V-belt drive, spiral steel blades, rugged construction — 12, 25 and 50 cubic foot sizes.

A few of over 250 types of precision blocks made with Columbia molds.

Write for FREE Catalog

NOW! Columbia Block Machines available on lease-purchase or outright sale!

Columbia MACHINE

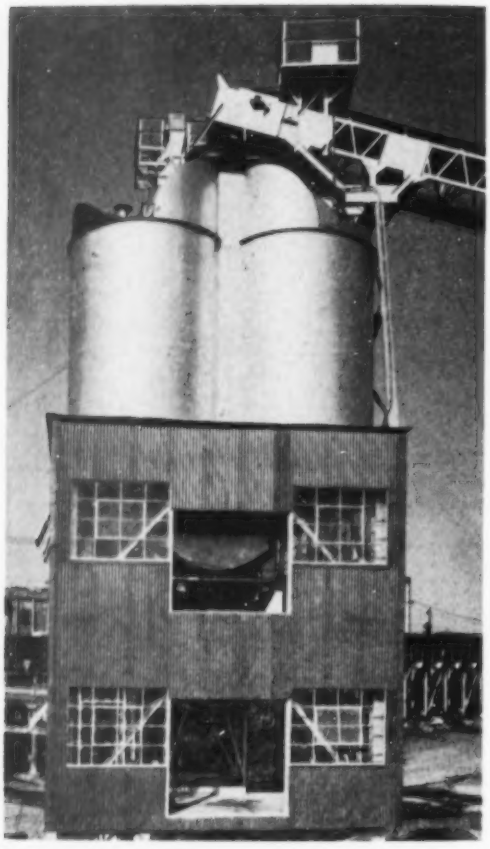
Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON

Factory Branch and Warehouse at Mukwanago, Wisconsin

DISTRICT OFFICES IN:
Wisconsin, South Carolina, Mississippi, Ohio, Florida, New Jersey, Virginia and California.

New WARNER COMPANY

READY MIXED CONCRETE PLANT

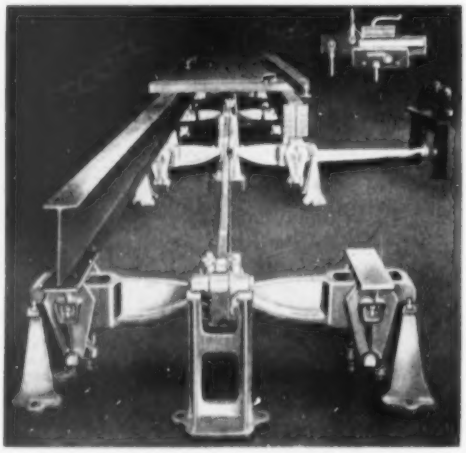


Two of four 70-ton aggregate bins at the Warner Company plant.

Another Great *Fanning Schuett* Installation

Warner Company's plant on the Schylkill River at 51st Street, Philadelphia, Pa., is an outstanding addition to the ready mix concrete industry. Built for a capacity of about 125 cubic yards, the major facilities of this project were designed, fabricated and erected by Fanning Schuett—and in only four months!

Fanning-Schuett provides complete Concrete Plants, Bins, Elevators, Screw Conveyors, Belt Conveyors, Batchers, Scales, etc.



Railroad track scales. Capacities of 80 tons or 125 tons.

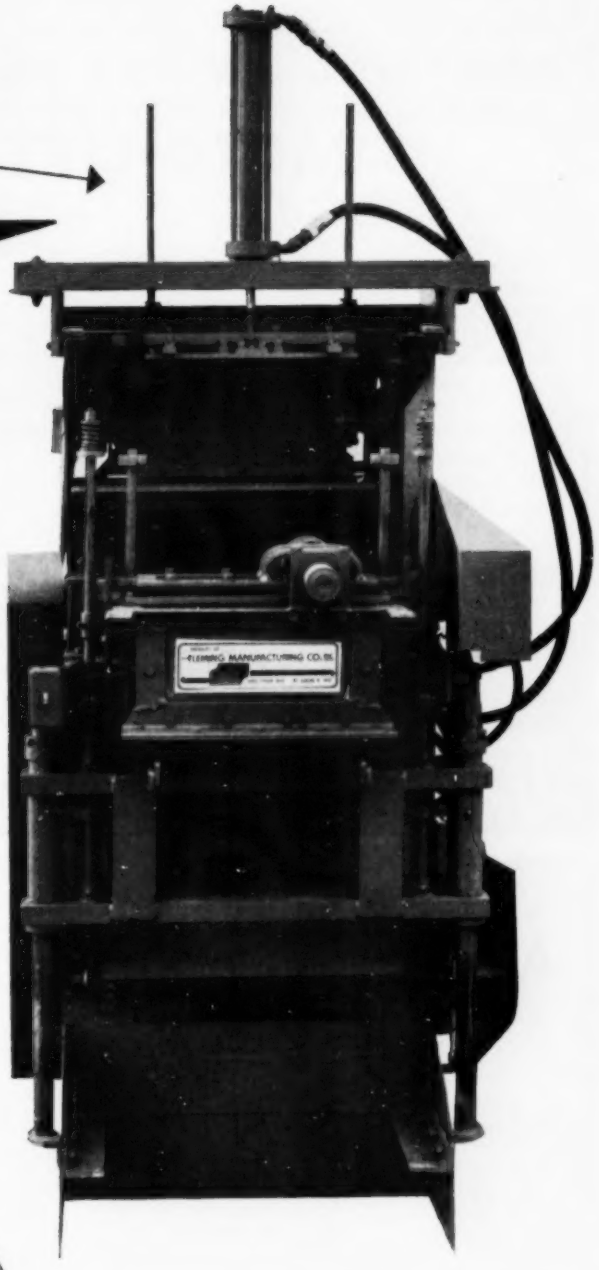
Full Details sent on Request

400-barrel cement storage bins in highway construction plant of contractor. Steel bins shipped completely assembled.

Fanning Schuett **ENGINEERING COMPANY**

4325 N. 3RD ST., PHILADELPHIA 40, PA. 220 BROADWAY, NEW YORK 7, N.Y.

ONE CENT PER BLOCK



. . . for 12 MONTHS pays for your FMC-180 . . . *IN FULL!*

That's right! If you were to set aside one penny for each block produced by the FMC-180 during an average 12 months of operation, you'd have enough money to pay for the FMC-180 in full!

Why is it that you can buy the FMC-180 for approximately a thousand dollars *less* than any other comparable precision-engineered block machine on the market today? Because Fleming sells *direct to you.* This eliminates the middle man. The savings are passed on to you. Many other advantages are yours when you buy the FMC-180. Being fully automatic, only one man is needed to operate the FMC-180, which produces up to 225 standard 8 x 8 x 16" blocks per hour!

No other block machine has all these FEATURES!

FULLY AUTOMATIC PRESSURE HEAD ATTACHMENT, with sealed-in vibration.

BLOCKS OF DIFFERENT HEIGHTS, using *plain pallets!*

INEXPENSIVELY ENLARGED—add a second FMC-180 for ⅓ the cost of a double machine!

HYDRAULIC POWER PLANT requires no air compressor!

CAM CONTROLLED, for positive timing of each operation.

AGITATING FEED BOX assures positive feed.

MAIL THIS COUPON TODAY!

FLEMING
MANUFACTURING COMPANY

489 FLEMING AVE., CUBA, MO., Phone CUBA 400

FLEMING MANUFACTURING COMPANY, Cuba, Missouri

Please rush complete information, including specifications, price and terms on the FMC-180, plus information on the following:

- ☐ **FREE! Concrete Block Plant Layout!**
- ☐ **FMC-400 Automatic Double Block Machine**
- ☐ **Skip Hoists**
- ☐ **FMC Stationary Mixers**
- ☐ **Material Hoppers**
- ☐ **Racks**
- ☐ **Elevators**
- ☐ **Lift Trucks**

Name_____

Firm_____

Address_____

City_____ State_____

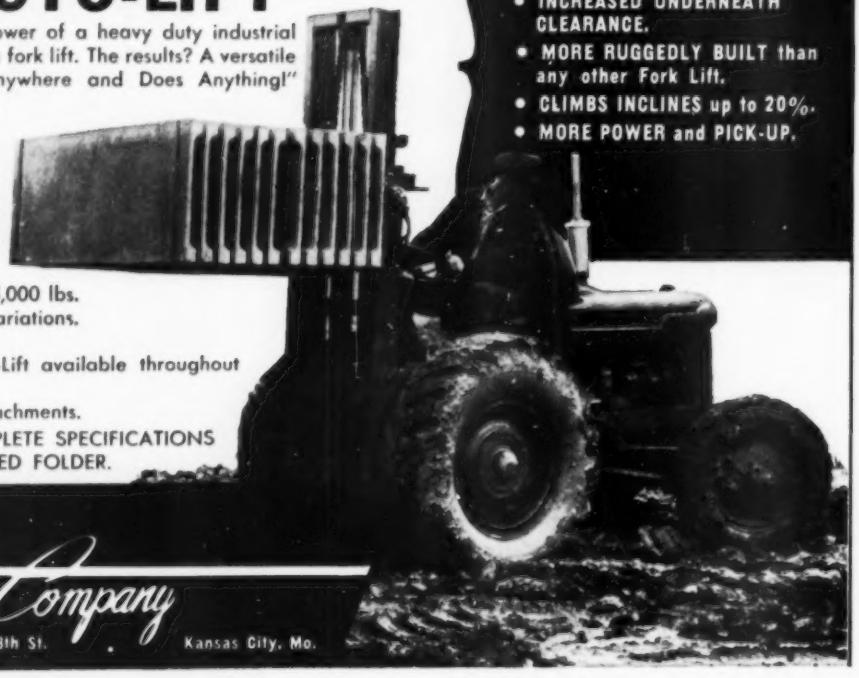
HANDLING "IN THE ROUGH"?
CHECK THESE 6 ADVANTAGES OF
TRACTO-LIFT

- MAXIMUM FLOTATION with Oversize Tractor Tires.
- GREATER TRACTION.
- INCREASED UNDERNEATH CLEARANCE.
- MORE RUGGEDLY BUILT than any other Fork Lift.
- CLIMBS INCLINES up to 20%.
- MORE POWER and PICK-UP.

TRACTO-LIFT combines the power of a heavy duty industrial tractor with the efficiency of a fork lift. The results? A versatile unit that literally "Goes Anywhere and Does Anything!" Concrete block, slabs, stone, regardless of load or the terrain Tracto-Lift can handle it faster, easier and better. Yet for all its advantages, this unit *costs less* than any other fork lift of equal size and capacity.

Lifting capacities—3,000 to 15,000 lbs.
Fork lengths—30-108" in 6" variations.
Lifting height—10' to 25'.
Parts and service for Tracto-Lift available throughout the world.
Complete line of versatile attachments.

WRITE TODAY FOR COMPLETE SPECIFICATIONS AND ILLUSTRATED FOLDER.



TRACTO-LIFT Company
800 East 18th St. Kansas City, Mo.

PRASCHAK
AUTOMATIC 400

- **AUTOMATIC** capacity of 400 blocks/hour
- **PRESS HEAD** pressed top blocks
- **TAMPER** tamped at rate of 200 blows/minute
- **VIBRATION** powerful, variable, yet smooth
- **LOW PRICED** $4195.00 complete

SEND FOR FULL INFORMATION

We also manufacture:

Mixers in five sizes, Bucket Elevators, Hammer-mill Crushers, Rotary Screens, Conveyors, Lift Trucks, Silo Stave Machines.

PRASCHAK MACHINE CO.
MARSHFIELD WISCONSIN

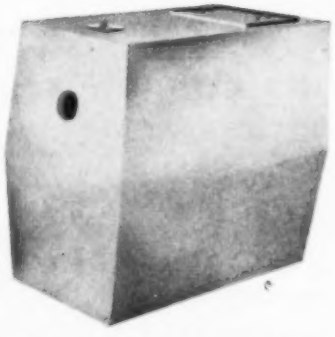
Life-Long Septic Tank Forms
THE PRODUCTION LINE METHOD

Offer you more profits with less effort. Our two weeks instructions practically guarantee your complete success from the start.

Modern America

Must have either SEPTIC TANKS or sewers. We are here to sell you the finest septic tank forms. "LIFE-LONG"—the result of over 15 years experience.

If profits of 100% plus interest you

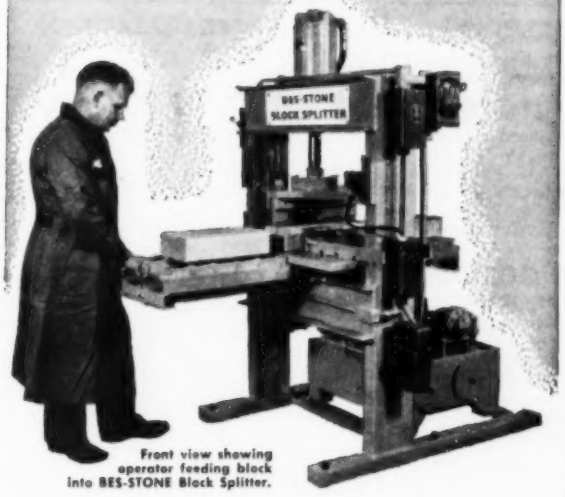


Write for Data and Specifications

HOWELL-HOGAN
BOX 206 BRIDGEPORT, PENNA.

The Standard of the World

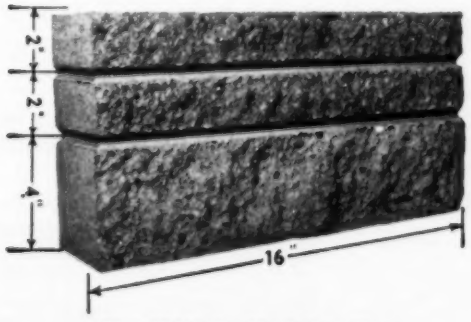
BES-STONE
BLOCK SPLITTER



Front view showing operator feeding block into BES-STONE Block Splitter.

- **Operates Automatically**
- **Produces 960 Split Block Per Hour**
- **Easily Adjusted for Various Heights**
- **Splits in a Straight Line — No Culls**
- **Has a Powerful Hydraulic Action**
- **Combines Quiet Operation with Safety**

Here is another Besser machine — the BES-STONE Block Splitter — designed primarily for the Concrete Products Industry. The machine splits block with speed and precision, in a variety of modular sizes. It's fully automatic. The block is placed under the knife automatically . . . the blade descends with a smooth, hydraulic action . . . and the split block is ejected by the incoming block. The operator is always at a safe distance. The BES-STONE Block Splitter enables plant operators to offer additional lines and affords new profit possibilities. Write for Bulletin No. 95A.



BES-STONE in Modular Sizes

BES-STONE, the product of the BES-STONE Block Splitter, is a new masonry unit with a split-stone appearance, made in many sizes and in a series of attractive, permanent colors. You'll find it complements, and greatly increases your sales of standard stripper block.

BESSER

Complete Equipment for Concrete Products Plants

BESSER MFG. CO., ALPENA, MICH., U. S. A.

1954
Now is the Time

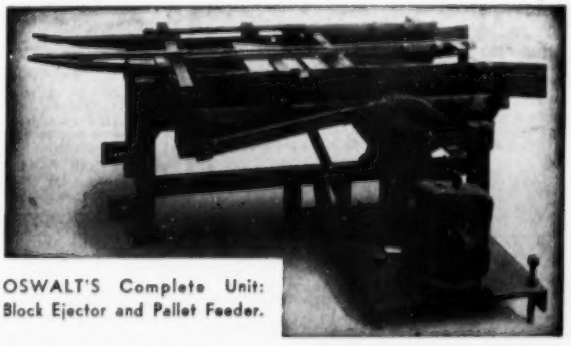
OSWALT SERVICE
for Vibrapac Owners

to set Block Profit Records

Revitalize your Vibrapac machine with Oswalt Service which includes:

1. **Shock-free Block Ejector and Front End Pallet Feeder.**
2. **New Simplified Height and Density Control.**
3. **Improved Vibration and Machine Changes to speed-up.**

You are assured of increased block production up to 1080 units per hour without sacrifice of quality. Your higher plant efficiency and lower operating costs will mean more profits in '54.



OSWALT'S Complete Unit: Block Ejector and Pallet Feeder.

Two U.S. Patents have been allowed on Oswalt improvements, one on the Synchronized Vibration, and the other on the Lug Link used in speed up.

Many satisfied customers operating scores of machines

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Concrete Manufacturer Classified Section

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PALLET RINGS
Write for full information
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4—Smith 4½ Yd. Mixers, excellent shape, serial numbers in 5800 series.
3—Blaw-Knox 3-Yd. Mixers, excellent condition, 1950 models.
2—Smith 3-Yd. High-Discharge Mixers, serial numbers in 5700 series.
1—Willard 3-Yd., 1952 model.
All of the above is in good operating condition, ready to go and reasonably priced.
2—Smith 2-Yd. Mixers, old but serviceable.
Also, several serviceable 2 & 3 Yd. Mixers, priced so as to make good standby units.
1—Insley Shovel, 1952 Model, used less than 2 months, $12,000.
All of the above located at:

Funkhouser Machinery Co.
2425 Jefferson St., Kansas City 8, Mo.
Telephone: HArrison 4365

WANTED: Septic tanks that need cleaning!

BIONETIC is a safe, sure, economical method.

Cleans sewage solids from tank
Eliminates odors
Cleans tile fields, prevents plugging
Cleans grease traps
Harmless to humans, and plumbing

BIONETIC at $4.25 per pound, or case of 12 one pound containers $48.00, 25 pound drum $3.25 pound.

Advisory Service, write us.

RELIANCE CHEMICALS CORPORATION
P.O. Box 6724, Dept. PQ Houston 5, Texas

MANAGER AVAILABLE

For cement products plant. 12 years experience in manufacturing and administration. Excellent record.
Reply to:
BOX NO. NV-705, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Illinois

FOR SALE

1—Concrete Pipe Machine—12"-60"
2—Mixer & Skip. First Class condition.
BOX NO. A-18, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

FOR SALE

Concrete block plant in Arkansas. Columbia equipped. Good backlog with excellent future potential. Trucks, steam kilns and two RR. sidings. Out of town interests demand attention. $30,000 plus inventory.
Box No. MO-607
c/o The Concrete Manufacturer
431 South Dearborn St. Chicago 5, Ill.

FOR SALE

We have taken a GOCORP JUNIOR SINGLE block machine in on trade for a GOCORP TWIN. This machine with 8" attachment, which is in A-1 condition, has been completely overhauled. The 8" attachment will be rebuilt to fit your pallets or we can supply you with pallets, either new or used. Only $3,600.00 buys this GOCORP JUNIOR SINGLE and 8" attachment. Cash or terms.

OLSEN SALES COMPANY
ROCK RAPIDS, IOWA

New 4 yard central Koehring Mixer. Bargain.
120 ton Butler Bin with 3 beam scales $4500.
New and used Bucket Elevators, any size.
Austin portable Washing Plant complete, 100 ton hr.
8000 ft. 10 inch Forms. 5 miles 2 inch Pipe.
27 E. Rex Paver. 6 x 20 Farrell Jaw Crusher $1000.
EUGENE ASHMUS
P. O. Box 391 Kenosha, Wisconsin
Phone 21743

BESSER VIBRAPAC OWNERS

can now make perfect thimble holes in chimney blocks at same rate of speed as ordinary chimney blocks with new attachment to their machine.
Write: CINDERCRETE PRODUCTS CO.
Arcola Ave. & Atkinson St.
Regina, Sask., Canada

CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.
manufactured by
LANDERS-SEGAL COLOR CO.
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FOR SALE

2B Jolterete. 3 years old. Needs no repairs. Dual Vibration, height control and power carriage and Offbearer. Also, 4" mold box and pallets; 8" mold box and pallets; 12" mold box and pallets. 8" attachments for Corner and sash blk. Chimney mold box and pallets. 4" pallets for 4" solid blk. Also, 50 steel racks and a 20 cu. ft. mixer. A complete outfit, ready to operate. Price $9000.00.
ALBERT J. SMALDONE
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CEMENT ENGINEER

Positions open in process technology; some traveling. For Chemical or Mechanical Engineering graduates with experience in cement plant operation. Location in Chicago suburb.
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CEMENT PAINT EXPERT

For consultations preceding construction of factory in South America. Paints based on white and/or grey portland cement.
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WANTED

Good used concrete pipe machine for making standard reinforced pipe from 12" through 36" in 4' lengths.
McPHERSON
CONCRETE PRODUCTS CO.
McPherson, Kansas

FOR SALE

Stearns Joltcrete's in A-1 condition
Relinable modular attachments
1—8" Siding attachment for No. 9 Pressed Steel and Cast Iron Pallets
Chase #294 Steel Racks, 72—8" block cap.
Turntables
Reconditioned Motors for Joltcrete's.

Let me know your wants in good used block making equipment.

GUY D. MOODY
1011 Chester Street Bristol, Virginia

WANTED

Jackson & Church Brick Machines, six or twelve pocket. Prices must be low. Contact:
W. F. COLE
3557 Shelmire Ave.
Philadelphia 36, Pa.

PRICED FOR QUICK SALE

Model D Truckman lift truck, with new Briggs & Straffen motor. 1200 18" x 18⅛" pallets, with steel racks. Can be sold separately.
H. G. RAPLEY
931 Wall Street Port Huron, Mich.

GARBAGE BOX MOLDS

Successful Garbage Box Manufacturer has a few surplus box molds for sale. Modern design. Formulas and operating procedure derived from many years of manufacturing experience insures your success. $500.00 per mold. Write for details.
BOX NO. A-14, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Illinois

FOR SALE

While they last:
2 No. 9 Joltcrete block machines $1000.00 each.
4" and 8" Modular pallets, 17c each.
F.O.B. Mishawaka, Ind.
CONCRETE PRODUCTS CORP.
2700 W. Ewing Ave. Mishawaka, Ind.
Phone 5-1313

FOR SALE

1 Rockercrete Block Machine. Air operated, Vibrator, single unit, 5 horsepower. Air Compressor 7000 Pallets 4 - 6 - 8 - 12 Anchortamper Brick Machine. Will sacrifice for a quick sale.
LANDIS SUPPLY
Landisville, N. J.

LOWER COST
PACKER-HEAD WINGS
Proved to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

YOURS TO SERVE

If you have not found the equipment you are looking for, the research dept. of The Concrete Manufacturer can and will gladly assist you. Tell us what it is . . . Write to
Research Dept.
C/O The Concrete Manufacturer
431 S. Dearborn St. Chicago 5, Illinois

SPACE HEATERS

War Surplus Bargain

New — Ready To Use!

40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel.
—Electric blower—12 V. DC or 110 V. AC using small transformer which we furnish with each heater.

Portable, Quick, Clean Heat

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

$95.00 each

Clapp, Riley and Hall Co.

14 No. Clinton St.,
Chicago 6, Illinois

FOR SALE

One — like new Appley Yellen high speed block machine, used as demonstrator only. $3500.00.
One — like new Appley 14 ft. mixer $700.00.

J. J. Yellen Perth Amboy, N. J.

FOR SALE

Dunbrik Brick Machines, pallets, welded racks, extra parts, good condition, extremely low prices. Inquire:

W. F. COLE

3557 Shelmire Ave. Philadelphia 36, Pa.

PLANT SUPERINTENDENT FOR CONCRETE BLOCK PLANT LOCATED AT MIAMI, FLORIDA

An opportunity for an experienced and well qualified man to take over the management of three block plants. Prefer a man with engineering background.

Excellent salary and bonus. Replies confidential. Give complete resume of past experience.

MAULE INDUSTRIES Inc.
1760 Purdy Avenue
Miami Beach, Florida

STOP *that* WATER

With FORMULA NO. 640

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

WE MUST SELL THE FOLLOWING EQUIPMENT IMMEDIATELY. ALL IS A-1 CONDITION EQUIPMENT THAT WAS TAKEN IN ON TRADE FOR A "GOCORP SENIOR." NO REASONABLE OFFER REFUSED. CASH OR TERMS.

1—#9 Stearns Joltcrete with dual vibration and power carriage	$2,500.00
1—Power operated Off-bearer, less compressor	500.00
1—3" Attachment for #9 Joltcrete	400.00
4,000—3" Pressed steel pallets, fit above, code QUARTZ @ 25c	1,000.00
1—4" Attachment for #9 Joltcrete	450.00
3,000—4" Pressed steel pallets, fit above, code ZONAL @ 30c	900.00
1—8" Attachment for #9 Joltcrete	450.00
3,000—8" Pressed steel pallets, fit above, code DRAM @ 50c	1,500.00
1,500—8" Pressed steel corner sash pallets, fit above, code DROSS @ 50c	750.00
1—12" Attachment for #9 Joltcrete	450.00
2,000—12" Pressed steel pallets, fit above, code PECAN @ $1.00	2,000.00
1—8" Header attachment for #9 Joltcrete	500.00
60—Model 72 Steel racks @ $25.00	1,500.00

The Above $12,900.00 Package May Be Had for Only $8,000.00 or Will Sell Piece Meal.

OLSEN SALES COMPANY
ROCK RAPIDS, IOWA

IDLE EQUIPMENT WASTES MONEY

A good way to get back a large part of the money you spent for equipment you're no longer using is to SELL IT.

And, the best way to sell it is through the Concrete Manufacturer, the Market Place for supplies and services.

Let someone else have the benefit of equipment you can't use in exchange for hard cash you can use in other ways.

So important is the Concrete Manufacturer used equipment section that many readers (and there are over 24,000 of them—all potential buyers) turn to it first when C M arrives on their desk.

Tell us what you have to offer for sale or trade, we'll set up the ad for you. Mail today and watch the results.

THE CONCRETE MANUFACTURER
431 South Dearborn St., Chicago 5, Ill.

FOR SALE

BESSER "VICTORY VIBRAPAC

Excellent condition with 4", 8", 12" and Brick Attachments.
Air Offbearing Hoist
2200 Plain Pallets, 13x18½
18 Cubic Foot Stearns Mixer
54 Steel Racks on wheels
2 Transfer Cars
1200 Ft. Narrow Gauge Rail
Equipment in excellent condition — will be in operation until middle of January—being replaced by larger machine—May be inspected at any time.

Write for further details and price.

PARK AVE.
CEMENT BLOCK CO., INC.
1350 Park Ave., Cranston 9, Rhode Island

FOR SALE
JOLTCRETE & EQUIPMENT

1—No. 9 Joltcrete, 45% void pallets, racks, turntables and mold boxes for the manufacture of 4", 6", 8", 12" concrete and cinder block. This equipment is in excellent condition and can be seen in operation. Daily average production per 8 hour shift in 8" equivalents

Concrete units	4320
Cinder units	4760

BOX NO. A-15, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Ill.

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE

"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

EXTRA SALES for you in Houses with Basements

Home owners want basements. Tastes differ by regions but for the nation as a whole there is an overwhelming preference for basements.

Latest surveys conducted by national magazines show this demand. Here is the proportion of those surveyed by each magazine who want basements:

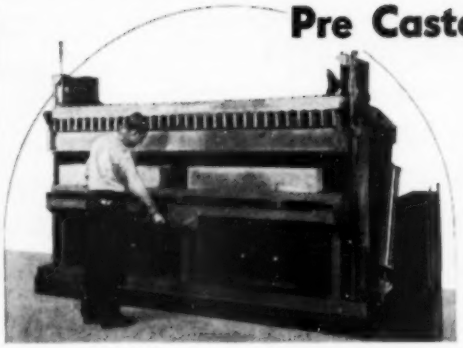
American Home	**67.0%**
Better Homes and Gardens	**65.0%**
Colliers	**73.0%**
Curtis Publishing Co.	**76.9%**
Living	**68.3%**
McCall's	**72.8%**
Parents	**76.3%**
Small Homes Guide	**65.2%**

Such popularity is easily understood. A basement provides the most economical space for storage, heating plant, playroom, workshop, darkroom or laundry. Putting these facilities in the basement leaves more lot space for lawn, flowers and outdoor living.

Inasmuch as there exists such a strong demand by prospective home owners for basements, they constitute a good source of additional sales. In many designs more block are used in the basement walls and partitions than in the rest of the house. That's why many leading concrete masonry manufacturers find it pays to promote basements—with concrete masonry foundations and partitions—among architects, builders and lending agencies.

PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Pre Caster



profits from hard to make units

● Better than 100% markup on concrete units you can make on the new *PreCaster* . . . any shape that will strip through a straight box . . . such as lintels, slabs, highway guard rail posts, parking lot markers, joists, channel roof and floor slabs.

● Revolutionize your block business by these new avenues of volume and profit. . . . offering units to match the same beautiful texture of your regular blocks.

● Write today. Be the first in your market to offer quality only *PreCaster* can insure. Relatively low investment!

Extra heavy . . . stripper head frame of two 2"x4" steel bars.

Superb electrical vibration from two V-200 Syntron units.

Handles any aggregate.

One man operation.

Makes units with 4" variations up to 10' long . . . lintels 4"x8" or 8"x8" up to 10' long.

Overall height 7'6".
Overall length 11'6".
Overall depth 4'0".
Shipping wt. 4620 lbs.

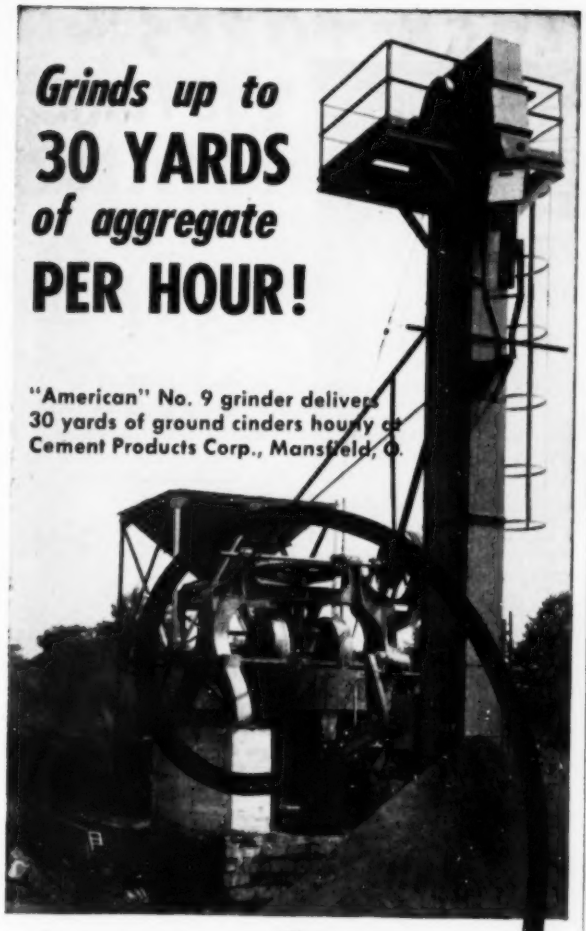
PreCaster Inc. • 5209 Beech Street • Cincinnati 17

Get GOOD RESULTS *Fast*

Advertise your idle equipment

***Now* in the CONCRETE MANUFACTURER**

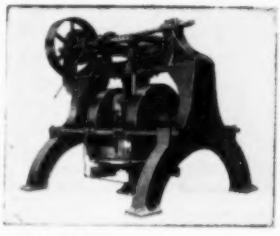
Grinds up to 30 YARDS *of aggregate* PER HOUR!



"American" No. 9 grinder delivers 30 yards of ground cinders hourly at Cement Products Corp., Mansfield, O.

HERE'S WHY AN *American* GRINDER IS THE *RIGHT* GRINDER FOR YOUR PLANT . . .

- Needs no screen plates
- Handles material wet or dry
- Adjustable to your volume and size requirements
- Requires only minimum maintenance
- Has low power consumption
- Good for years of trouble-free operation



YOU CAN'T BEAT AN "AMERICAN" FOR GRINDING

- CINDERS
- HAYDITE
- PUMICE
- SLAG

and a wide range of quarry and mine products.

If accurate grinding, in volume, poses a problem in your plant . . . ask for a non-obligating consultation with the "American" grinding specialist . . . write, wire or phone.

***American* GRINDERS**

W. A. RIDDELL CORP., BUCYRUS, OHIO

Get WINTER CONCRETE with HIGH EARLY STRENGTH *by using*

SOLVAY CALCIUM CHLORIDE

- **Lowers Costs!**
- **Saves Time Between Operations!**
- **Permits Quicker Finishing!**
- **Cuts Protection Time!**
- **Assures Full Ultimate Strength!**

Today—with SOLVAY Calcium Chloride, it is both possible and practical to carry on concreting operations during the winter months. The addition of SOLVAY Calcium Chloride assures fast setting to permit quick finishing, full ultimate strength and a short protection period—even in freezing weather.

Whether you do your own mixing or use transit-mix concrete, you will be sure of quality work, minimum cost and a faster operation if you are sure that your specifications include: 1. The use of heated water and materials. 2. The use of SOLVAY Calcium Chloride in the mix. 3. The use of proper covering or protection against anticipated temperatures.

Send for FREE BOOK Containing Full Details!

"The Effects of Calcium Chloride on Portland Cement" is filled with important information and answers to your questions about the use of calcium chloride in concrete. Mail coupon below for your free copy.

When ordering READY MIXED CONCRETE IN COLD WEATHER —Be sure to *Specify* SOLVAY Calcium Chloride

Allied Chemical

SOLVAY PROCESS DIVISION
Allied Chemical & Dye Corporation
61 Broadway, New York 6, N. Y.

Please send me without obligation your book, "The Effects of Calcium Chloride on Portland Cement."

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Company..... Position.....

Address.....

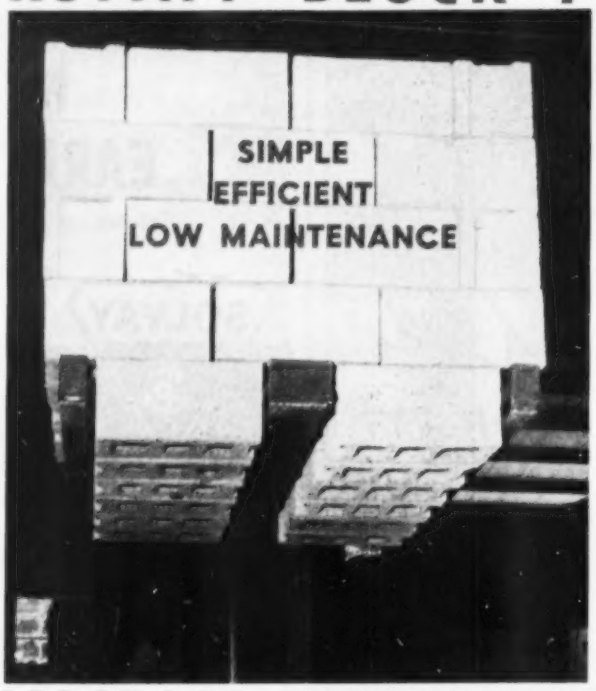
City..... Zone..... State.....

CM-1

BICKERSTAFF BLOCK FORKS

AUTOMATIC
OR
HYDRAULIC

THE BEST
FORK FOR
MECHANICAL
CUBING



ONE FORK
HANDLES
ALL
SIZE
BLOCK

ATTACHES TO
ANY
LIFT TRUCK

BICKERSTAFF INCORPORATED
MANUFACTURERS OF MATERIAL HANDLING EQUIPMENT
COLUMBUS, GEORGIA

TIME TESTED! Butt Weld JOB PROVED!

DUR-O-WAL

WITH TRUSSED DESIGN

The Backbone of Steel for EVERY masonry wall. Dur-O-wal is an electrically welded, custom-designed reinforcing member that lies fast in the mortar joint.

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Frontier Manufacturing Company
Phoenix, Arizona

Dur-O-wal Products of Alabama, Inc
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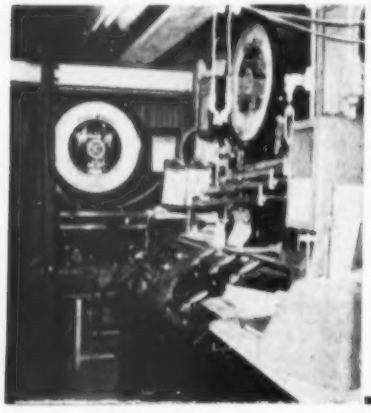
Birmingham 7, Alabama



Prescription for Premium Concrete

[SC]² BATCHING CONTROL

Leading concrete producers are standardizing on [SC]² Control because it provides batching accuracy and automatically compensates for moisture content of aggregates. View at left shows a typical [SC]² installation in a large Chicago plant. This shows the [SC]² Batching Control Assembly, with air valves for admitting cement, aggregate and water to weigh hoppers.

Complete Information sent on Request

See us at the Conventions, Feb. 15-19, 1954 at the Conrad Hilton Hotel, Chicago, booth No. 207.

SCIENTIFIC CONCRETE SERVICE CORPORATION, 724 Salem Ave., Elizabeth 3, N.J.

Speed Up Hand Work with the BIG BULLY AIR HAMMER

- Clean Equipment
- Shape Dry Concrete
- Star Drill

Clean Mixing Trucks Faster
Clean Fragile Mixing Equipment Safely
Speed Up Star Drilling

Weight only 50 oz., 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

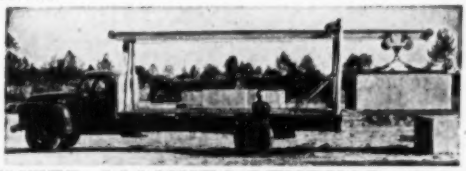
Write for Complete Information Today

SUPERIOR PNEUMATIC & MANUFACTURING, INC.
4758 WARNER ROAD CLEVELAND 25, OHIO

"Built by CARPENTER"

. . . better Equipment for large-scale output of septic tanks meeting all specifications. CARPENTER units insure faster pouring, stripping, setting and resetting . . . reduces labor costs to minimum. Satisfied customers from coast to coast. Write for details.

ONE MAN handles our Delivery Rig



CARPENTER MANUFACTURING CO.
R.F.D. No. 1, Box 470, Richmond 23, Va. • Phone 28938

NOW MORE THAN 140 LICENSED MANUFACTURERS Producing

Patented
homeward *Concrete* STEPS

A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.

For Complete Information Write
ROGER F. WILLIAMS, Licensor
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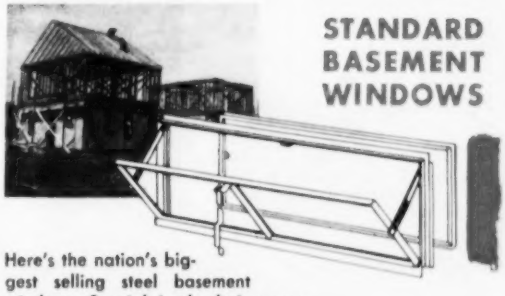
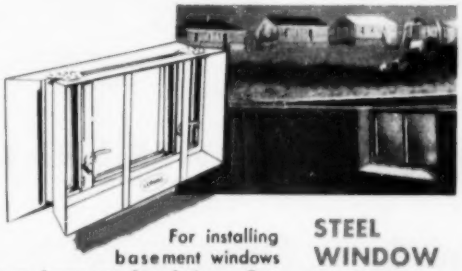
kewanee Products FOR CONCRETE CONSTRUCTION



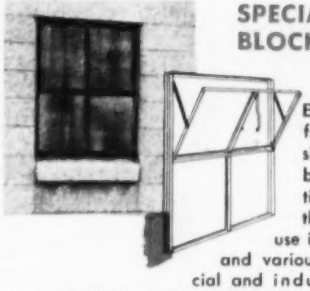
STANDARD BASEMENT WINDOWS

Here's the nation's biggest selling steel basement window. Special jamb design prevents fouling of vent with mortar — cuts down installation time. Wide fins and broad sill assure secure anchorage — long handle cam latch gives jam-tight closure.



STEEL WINDOW BUCK

For installing basement windows in poured concrete foundations. Cuts cost by eliminating labor. Every window frame is installed square and true and securely embedded in concrete. No leaky mortar joints at sill and jambs. Produces a clean attractive finish around the window.



SPECIAL CONCRETE BLOCK WINDOWS

Especially developed for use with Besser sill block. Eliminate built-up sills and cutting and patching of the wall. Ideal for use in barns, milk-houses, and various types of commercial and industrial buildings of concrete-block construction. Choice of 2 styles; S24P 2-light window for 32½" x 24⅛" wall opening and U18P 4-light window for 32½" x 40⅛" wall opening.

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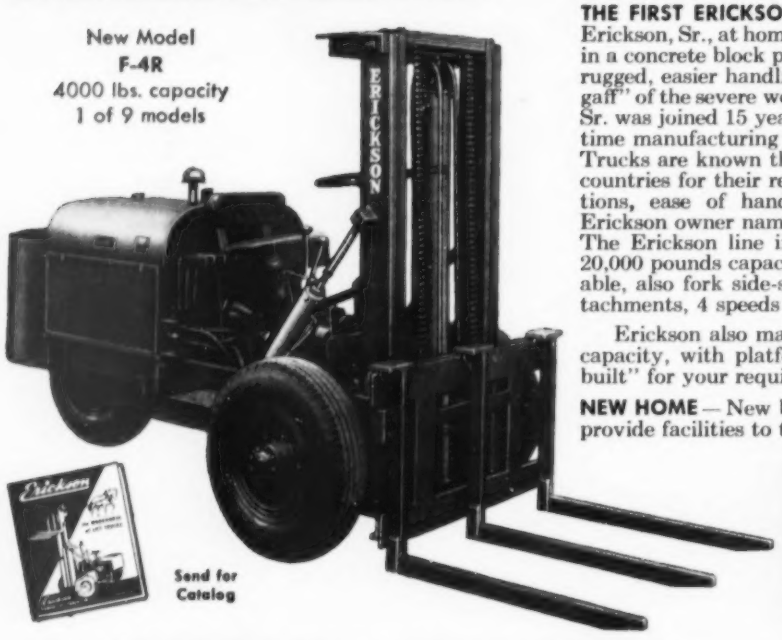
Erickson

• Pioneers in the Concrete Products Industry •

POWER LIFT TRUCKS

New Model
F-4R
4000 lbs. capacity
1 of 9 models



Send for Catalog

THE FIRST ERICKSON was built 30 years ago by George Erickson, Sr., at home in his own garage. As superintendent in a concrete block plant, he saw the great need for a more rugged, easier handling lift truck which would "stand the gaff" of the severe work conditions in the industry. George Sr. was joined 15 years ago by his son George Jr. in a full-time manufacturing business. Today Erickson Power Lift Trucks are known throughout America and many foreign countries for their remarkable traction under ALL conditions, ease of handling, ruggedness and long life. An Erickson owner named it—"the workhorse of lift trucks." The Erickson line includes 9 fork models from 2,000 to 20,000 pounds capacity. A variety of fork styles are available, also fork side-shifter, hydraulic scoop and other attachments, 4 speeds forward, 4 speeds reverse.

Erickson also makes platform models to 7,000 pounds capacity, with platform size and height of lift "custom-built" for your requirements.

NEW HOME—New building now nearing completion, will provide facilities to triple present production.

See us at the
N. C. M. A.
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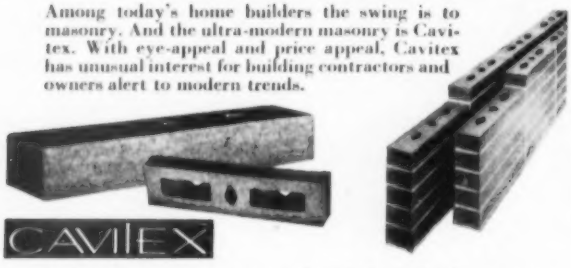
Washington, D. C.
FEBRUARY 8-11, 1954

ERICKSON POWER LIFT TRUCKS, Inc.

1403 Marshall Street Northeast
MINNEAPOLIS 13, MINNESOTA

To Build Modern . . . *without Price Penalty* . . . Build of Cavitex

Among today's home builders the swing is to masonry. And the ultra-modern masonry is Cavitex. With eye-appeal and price appeal, Cavitex has unusual interest for building contractors and owners alert to modern trends.



Cavitex is new—in size, proportion, design and color range. Cored-out design provides insulation values and saves weight. Easily the most practicable unit for cavity-type wall construction. Ideal also, as veneer over frame, or as facing over 4" concrete block. Available in pastel tones for exposed masonry interior walls.

Expensive? Just the reverse! Material for material, Cavitex costs less than frame. This low price made possible by manufacturing economies. Local plants convert local raw materials into units for local builders. Usual high costs of freight and distribution are practically eliminated. Write today for 4-color brochure and name of nearest local production plant.

W. E. Dunn Mfg. Co.
420 W. 24th St., Holland, Mich.

Local Manufacturing Opportunity

Many choice locations are open for the local manufacturing of Cavitex. Excellent opportunity for concrete products manufacturers. Each plant operates under franchise in protected territories. Cavitex machine available on lease or sale. If interested, ask for "Opportunity Unlimited."

X-2

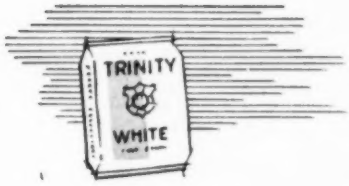
USE THE BROADCAST SECTION

for effective disposal of your used equipment

USE Trinity White

PORTLAND CEMENT

the whitest white cement



Trinity White is a true portland cement and has unexcelled beauty—the beauty of the whitest white . . . plus the best possible results when color pigments are added. Use it wherever you want greater masonry beauty or higher light reflection as for example: architectural concrete units; terrazzo; stucco; light-reflecting floors and walls. For descriptive literature, write Trinity White Cement, 111 W. Monroe St., Chicago.

A Product of GENERAL PORTLAND CEMENT CO. • Chicago • Dallas • Chattanooga • Tampa • Los Angeles

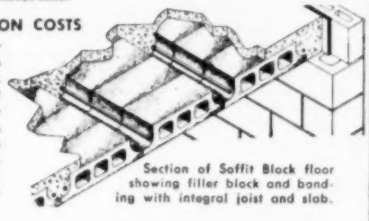
"I Find BOTH Profitable"

VIBRAPAC Block and SOFFIT Floor and Roof Filler Block

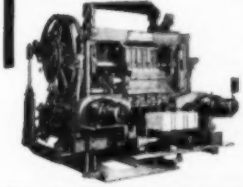
Vibrapac block plants are now adding to their profits by manufacturing Soffit Filler Block for floors and roofs. These units assure permanent, fire-safe construction, at low cost. Soffit Block provide maximum acoustical and insulation values with natural base for radiant heat installations. Made in various sizes to coordinate with other modular materials.

CUTS CONSTRUCTION COSTS

Temporary adjustable steel centers support Filler Block while slab and joist are curing. Conventional shoring is eliminated. The smooth, flush surface can be plastered, painted or left exposed.



Section of Soffit Block floor showing filler block and bonding with integral joist and slab.



BESSER VIBRAPAC

Vibrapac Block for walls, floors and roofs, in all styles and sizes, are made on a Besser Vibrapac, using one set of Plain Pallets. Fully automatic. No machine operator required. Write for descriptive literature.

BESSER MANUFACTURING CO.

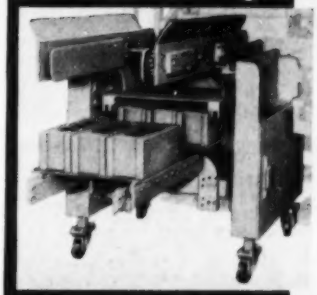
ALPENA, MICHIGAN, U. S. A.

Complete Equipment for Concrete Products Plants

A 7015-¾

BERGEN FRONT PALLET RETURN

Returns Pallets OVER outcoming block!



Detachable to roll away in 30 seconds!

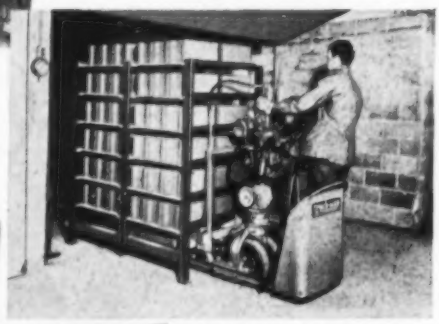
- Uses 18-1/2 x 26" or 19 x 27" pallets
- Adjustable for block heights-3-1/2 to 9-1/8"
- Can't be fouled by falling concrete
- Eliminates pallet chain conveyor ass'y

May be used on Besser Vibrapac

Write for bulletin

BERGEN MACHINE & TOOL CO., INC., NUTLEY, N. J.

POWERLIFT



Now **truck-man** INCREASES CAPACITY

FOR REAL BLOCK HANDLING ECONOMY

Designed especially for and tested in Concrete Products Plants—the new Model DHP Heavy Duty Truck-Man with *Power Lift* is ready to start saving money for you. This new Truck-Man will handle a full 72 block rack with ease. (New rated capacity—4500 lbs.) *Power Lift* eliminates the back-breaking, time consuming task of raising the load—a flick of the wrist and it's on the way. Once load is raised from the floor, TAKE OFF—balance of lift can be made in transit. As much as a minute is saved each trip—more trips per day—more work with less effort. Oh, yes—all the regular Truck-Man advantages of the agile standard models are retained.

FIVE OTHER VERSATILE MODELS

MODEL DH—4500 lb. Skid Lift with hand pump

MODEL DFP—3000 lb. capacity, power lift Pallet Toter.

MODEL DF—Pallet Toter with hand pump (3000 lb. capacity).

MODEL DT—2000 lb. Platform Utility.

MODEL DR—Truc-Tor for cargo trains. Up to 6500 lbs. on dry, level concrete.

TRUCK-MAN OWNERS

Convert your present Truck-Man trucks with the Packaged Power Lift Conversion Unit. New larger diameter lift cylinder and all other parts required by change are included. Easily and quickly installed.

Want to reduce your handling costs? Clip and mail this coupon today!

truck-man Div. of The KNICKERBOCKER CO.

570 Liberty Street • Jackson, Mich.

Sounds good, please send catalog and further information.

Name_____

Title_____

Address_____

City_____ Zone____ State_____

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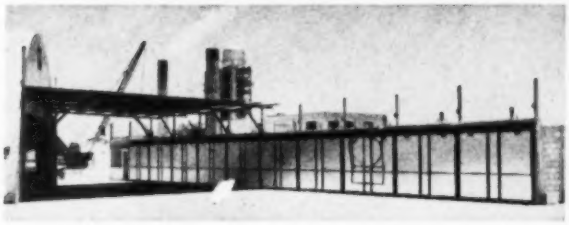
SAVE FUEL • REDUCE CURING TIME
• CUT COSTS • UP PROFITS
with *Standard* KILN DOORS!



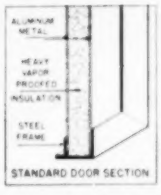
● This is the modern STANDARD kiln door installation of Portland Industries Inc., Riviera Beach, Florida. C. R. Wilson, the firm's Executive Vice President, writes: "Our Standard kiln doors have been very satisfactory."

To suit your individual requirements, three types of STANDARD kiln doors are available—the sliding carrier-type (shown above), the top hinge-type (which is pulled up by a hoist), and the side hinge-type.

CHECK THESE FEATURES

√ Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.

√ Rugged Steel Frame.



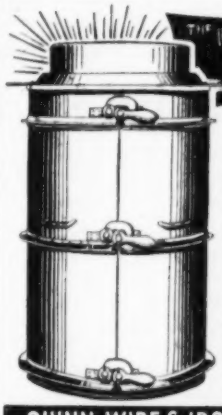
STANDARD DOOR SECTION

Get the Best — Send for Details Now
STANDARD DRY KILN COMPANY
P. O. BOX 5708 . . . . INDIANAPOLIS 21, IND.

YOUR KEY TO
POSITIVE ANCHORAGE
IN CONCRETE

PERMANENT RUST PROOF
THREADED SOCKET
SEE YOUR BLD'G. MATERIAL SUPPLIER
OR WRITE TO:
STAR EXPANSION PRODUCTS CO.
147 CEDAR ST. N. Y. 6, N. Y

COLORS
SYNTHETIC CONCENTRATED
RED
YELLOW BLUE
GREEN BROWN
BLACK
Color Card on Request
REICHARD-COULSTON, Inc.
15 E. 26th St., New York 10, N. Y. Factory Bethlehem, Pa.



THE *Quinn Standard*
FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

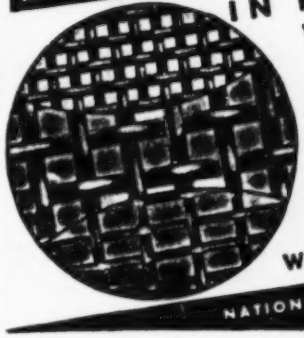
WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IA

The Concrete Manufacturer
CLASSIFIED SECTION
Is the Market Place
for your USED EQUIPMENT

Industry has
A WORLD OF CONFIDENCE
IN NAT-ALOY
WIRE CLOTH

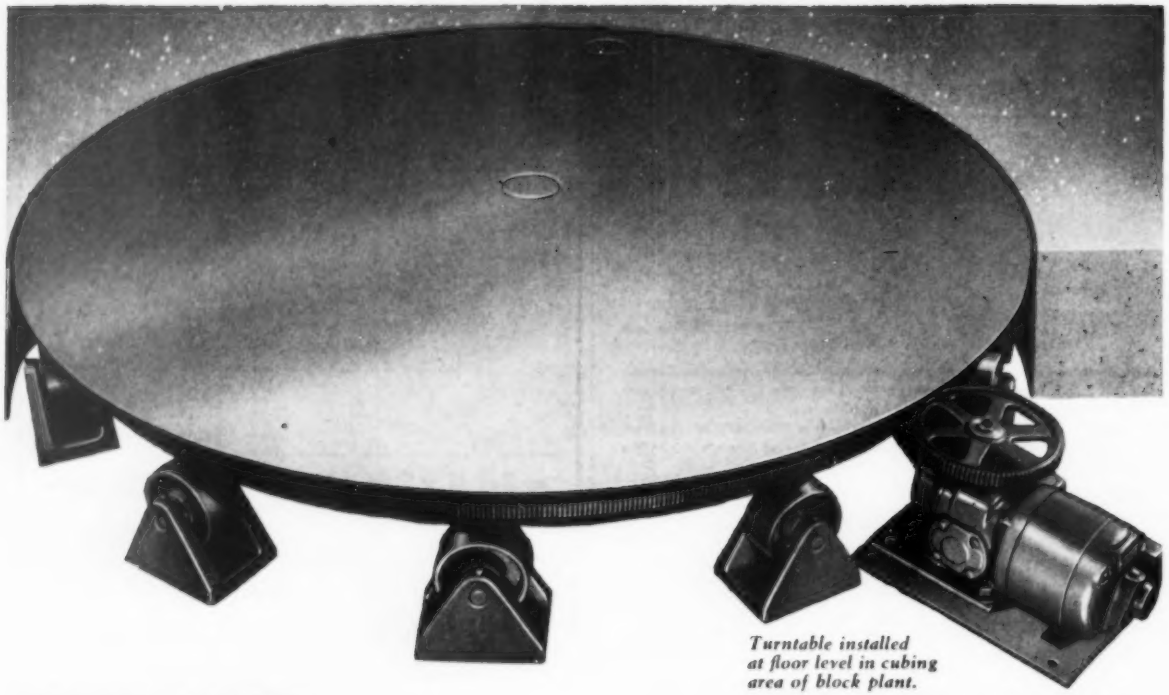


COVERS EVERY REQUIREMENT

. . . for a dependable, long-wearing, non-crystalizing Screen Cloth. Has "Nat-Aloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

Write for Catalog No. 55

NATIONAL WIRE CLOTH CO., INC
St. Paul, Minn



Turntable installed at floor level in cubing area of block plant.

CHASE POWER-DRIVEN TURNTABLE MAKES LOADING, UNLOADING AND CUBING EASIER...

DIAMETERS TO 12'...CAPACITY TO 10 TONS

This new equipment streamlines your production. Press a button and the rack is turned for loading, unloading or cubing. CHASE Power-Driven turntables have remote, push-button controls for forward, stop or reverse. You get greater efficiency and speeded-up production, which soon pay for the turntable.

CHASE Turntables have totally-enclosed gear reduction unit, anti-friction bearings throughout, self-aligning, positive mesh gear drive and easily accessible lubrication fittings. These mean long life, easy maintenance for the CHASE Turntable.

Easy to install

CHASE Turntables have a solid steel band circling the table and flush with the floor—no need for forms when concrete is poured. Power-driven turntables require a pit only 13" deep. Manually operated turntables, shown below need only a 4½" pit depth.

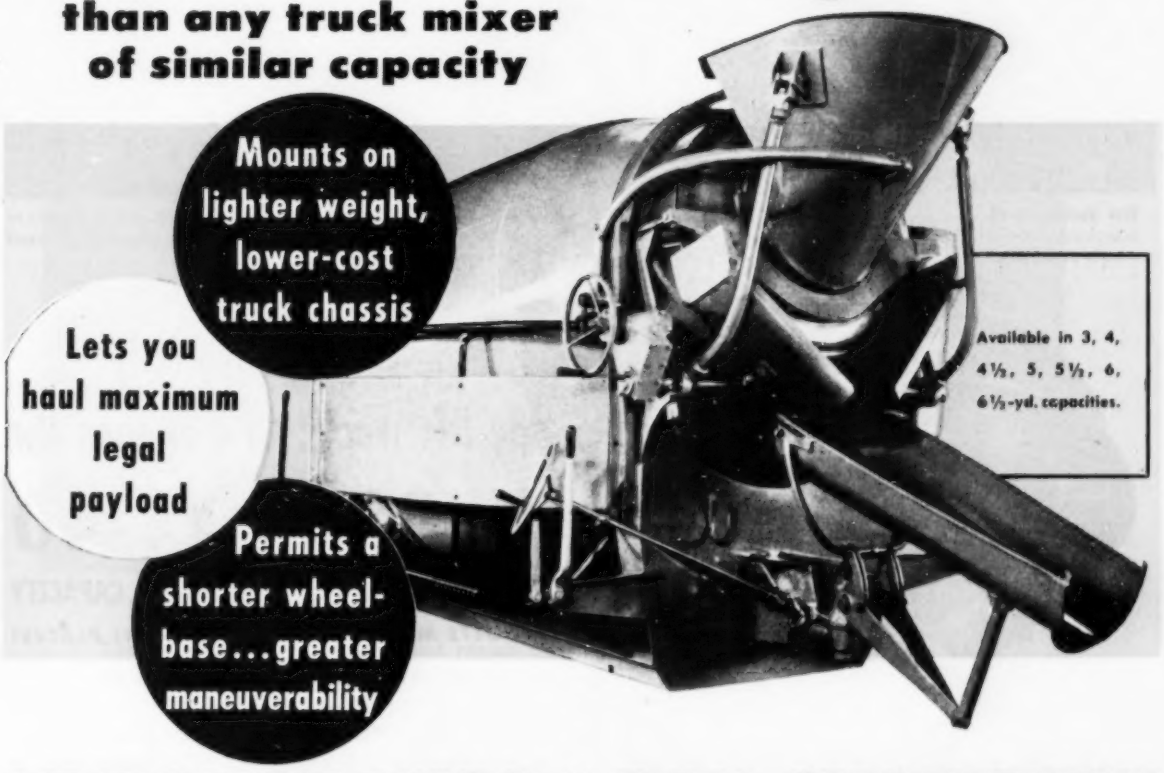
Write now for prices, specification sheets and further information.

CHASE
FOUNDRY & MANUFACTURING CO.

2400 PARSONS AVENUE · COLUMBUS 7, OHIO

Shorter and lighter!

than any truck mixer of similar capacity


Mounts on lighter weight, lower-cost truck chassis
Lets you haul maximum legal payload
Permits a shorter wheel-base...greater maneuverability
Available in 3, 4, 4½, 5, 5½, 6, 6½-yd. capacities.

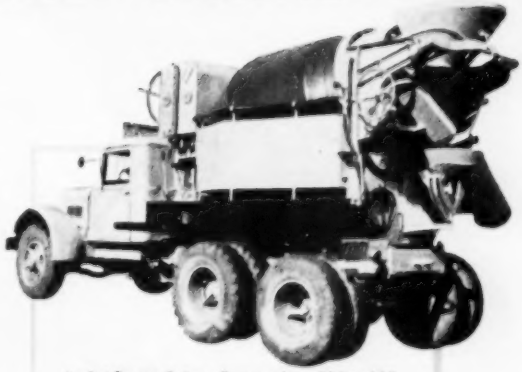
LE ROI-TRANSO LOAD CHAMPION

You carry full rated capacity within gross vehicle weight limits . . . make more round trips daily . . . and cut costs all around — with the Le Roi-Transo Load Champion.

Light weight and compactness are only two of the reasons why you enjoy such profitable performance. The patented Transo direct drive is another. It reduces non-productive dead-weight — eliminates ring gears, chains, and sprockets; thus cuts replacement and maintenance costs.

The Load Champion has many other equally practical features, other operating advantages. It has good mixing action. It loads fast. It discharges slump concrete speedily. It starts and discharge-reverses with a full load without shock.

Ask your Le Roi-Transo distributor to give you all the details. Or write for bulletin.



Le Roi-Transo DeLuxe Transo-mixer, 12" to 17" shorter than any other mixer-agitator of equal capacity—1,000 to 1,600 lbs. less dead-weight. 3, 4, 4½, 5, 5½, 6, 6½-yd. capacities. Available with fluid couplings or torque converters.

TRANSO DIVISION LE ROI

TD-11

LE ROI COMPANY *Plants:* Milwaukee • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Michigan.

A Subsidiary of Westinghouse Air Brake Co.

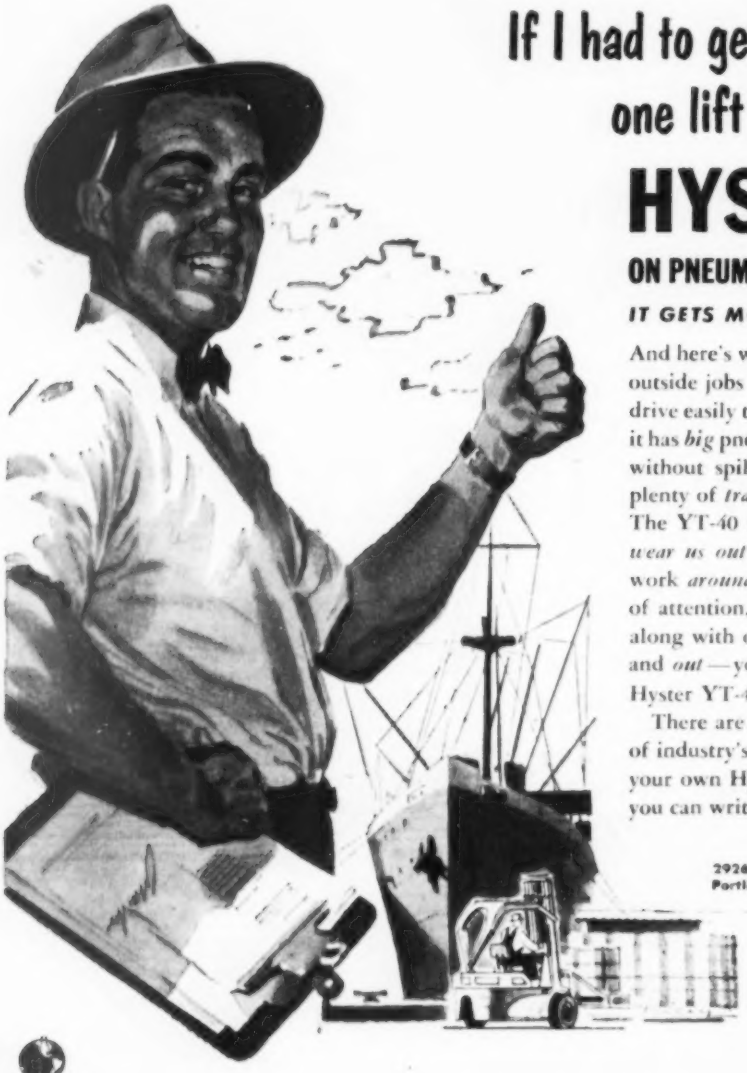
TRANSO DIVISION

3716 W. WISCONSIN AVE. • MILWAUKEE 8, WIS.

This Hyster YT-40 is equipped with a ram attachment to handle five railroad car wheels at one time.

Your yard becomes easily accessible storage space with the YT-40. *This is profitable use* of outdoor space!

The Hyster YT-40 is easily maneuverable in close quarters...often in places where hand trucks had been used.



If I had to get along with only one lift truck...I'd choose the

HYSTER YT-40

ON PNEUMATIC TIRES • 4000 LBS. CAPACITY

IT GETS MORE JOBS DONE IN MORE PLACES!

And here's why: It's *rugged* and *fast enough* to get *big* outside jobs done in a hurry—yet it's *small* enough to drive easily through crowded quarters indoors. Because it has *big* pneumatic *tires* it can get over the rough spots without spilling my load—also these big tires give plenty of *traction* for pulling through mud and snow. The YT-40 is mighty easy on floors—and it *doesn't wear us out* either! What's more, I've seen a YT-40 work *around the clock*, for *months* with a minimum of attention, other than refueling. If you have to get along with only *one* truck to do all your work *inside* and *out*—you couldn't make a better choice than the Hyster YT-40!

There are many other reasons why the YT-40 is one of industry's most popular lift trucks! But why not let your own Hyster Dealer tell you the whole story? Or you can write for Catalog 1016 to:

HYSTER COMPANY

2926 N. E. Clackamas St.
Portland 8, Oregon

1026 Myers St.
Danville, Illinois

THERE'S PROFIT IN HYSTER POWER

HYSTER

Be Sure to Call HYSTER Before You Buy ANY Lift Truck!

HYSTER COMPANY • FOUR FACTORIES: PORTLAND, OREGON • DANVILLE, ILLINOIS • PEORIA, ILLINOIS • NIJMEGEN, THE NETHERLANDS

. . . CASTING FOR PROFIT—

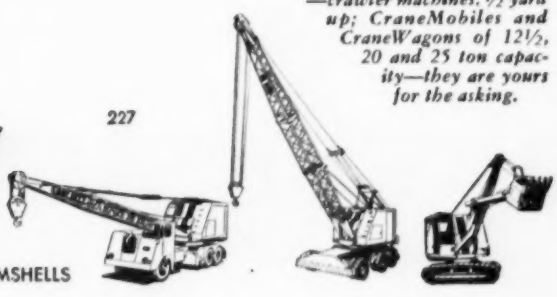
There is probably only one good reason for your being in business. In the final analysis this reason can be summed up in one word — PROFIT. And that means each piece of equipment must show profitable operation — produce bigger performance — require minimum maintenance. Here, for instance, are two ¾-yard Model 45 machines — each doing its job in the production and handling of sand and gravel.

Glance at the dragline photo again and note how the bucket is cast far beyond the boom point. This illustrates the easy operation, free-running machinery and accurate control plus fine balance which is built into this heavy-duty dragline. It has long, wide crawlers, alloy-steel bases, tandem drums in ball bearings, helical-cut gears, 517-cu.-in. gas engine, booster clutches and many other time-saving, money-making features.

Why not get the complete story from your nearest BAY CITY dealer or write direct for catalog.
BAY CITY SHOVELS, INC., Bay City, Michigan

Write for any of these catalogs —crawler machines, ½ yard up; CraneMobiles and CraneWagons of 12½, 20 and 25 ton capacity—they are yours for the asking.

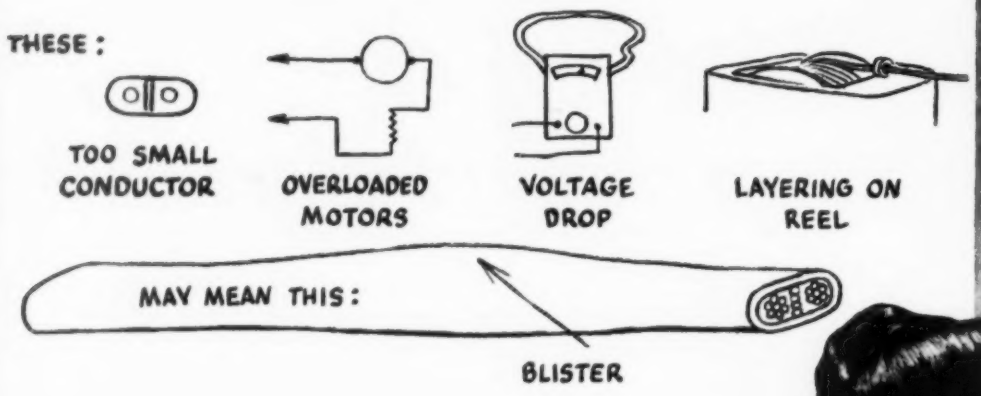
227



BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

HOW TO SPOT DAMAGE FROM CURRENT OVERLOAD . . .



. . . AND WHY THERE'S GREATER HEAT STAMINA IN ANACONDA'S NEW MINING MACHINE CABLE

Blisters, formed by gases from overheated insulation, are a sure sign of cable overloading. A torn cable may result. Since you can't always control overloads, it's important to choose *quality* cable.

Today, due to better design, jackets and insulation, good cables shouldn't cook on the reel the way they used to. But this only makes overloads harder to detect. They still may be present . . . caused by too small a conductor, overloaded machines, voltage drop or even layering of the cable. With 4 layers on the reel, according to I.P.C.E.A., unventilated bottom layers lose 65% of capacity.

WHY THE NEW ANACONDA CABLES ARE SAFER

First, they are more flame-resistant. Jacket is made from a new neoprene formula. Improved cold-rubber insulation gives greater heat stamina. Patented breaker strip* insures a safer ground. No ANACONDA Cable has ever failed a U. S. Bureau of Mines flame-test!

CABLE LIFE NOW MUCH LONGER

In 15 mines recently surveyed, ANACONDA Cables on shuttle cars are lasting up to 300% longer than cables made only a few years ago. Together, jacket and insulation protect these cables better – especially in wet mines where sliver-cuts can cause shocks. The cables are tougher. New-type stranding flexes better under tension.

All this means economy because *one* break in cheap cable costs more than you can save by buying on price. For a sample of this new cable, call your Anaconda Sales Office or Distributor. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.* 5330Z

ANACONDA®

TODAY'S HEADQUARTERS FOR MINE CABLE

*U. S. Patent No. 2,455,773

A Dorr Hydroseparator and two Dorr Classifiers are used by a large Mid-Western sand producer for desliming, scrubbing, washing and dewatering. The Dorr Hydroseparator and Classifiers are operated in series to produce a high grade commercial minus 28 plus 150 mesh product.

Two additional Dorr Classifiers have recently been installed to meet increased production demands.

No Lost Sand Production *Here* . . .

Five years of continuous operation . . . no lost production for repairs . . . and hardly a penny spent for routine maintenance.

That's the story on this job. And it is typical of the sand plants, large and small, where Dorr equipment is in operation.

For equipment that will serve you year after year *without high maintenance costs*, it will pay you to get in touch with Dorr. Whatever your production requirements, there is Dorr sand plant equipment scaled to fit your individual requirements. Ask a Dorr Engineer for the facts.

Better tools TODAY to meet tomorrow's demand

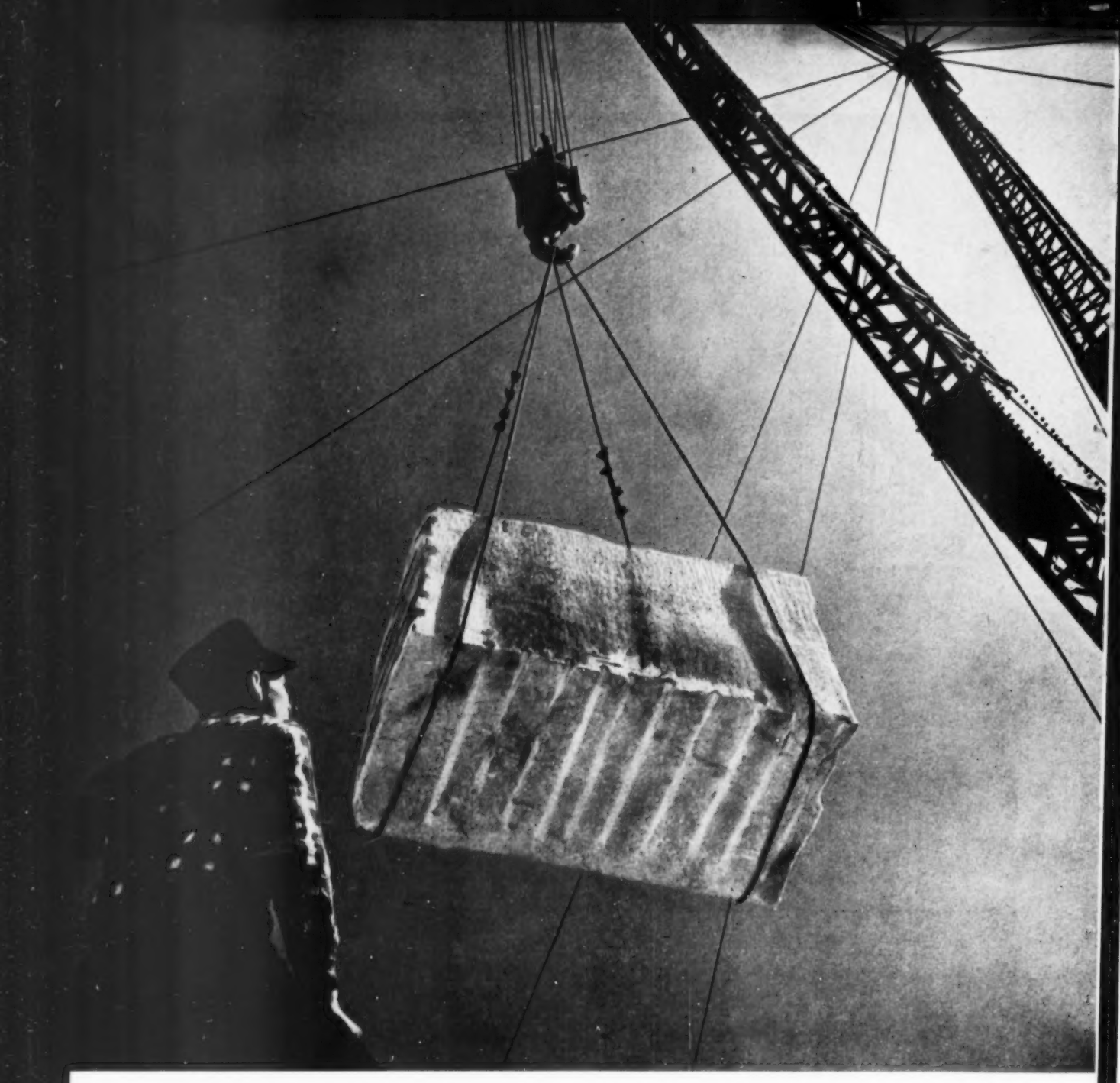
DORRCO

DORR

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Offices, Associated Companies or Representatives in principal cities of the world.



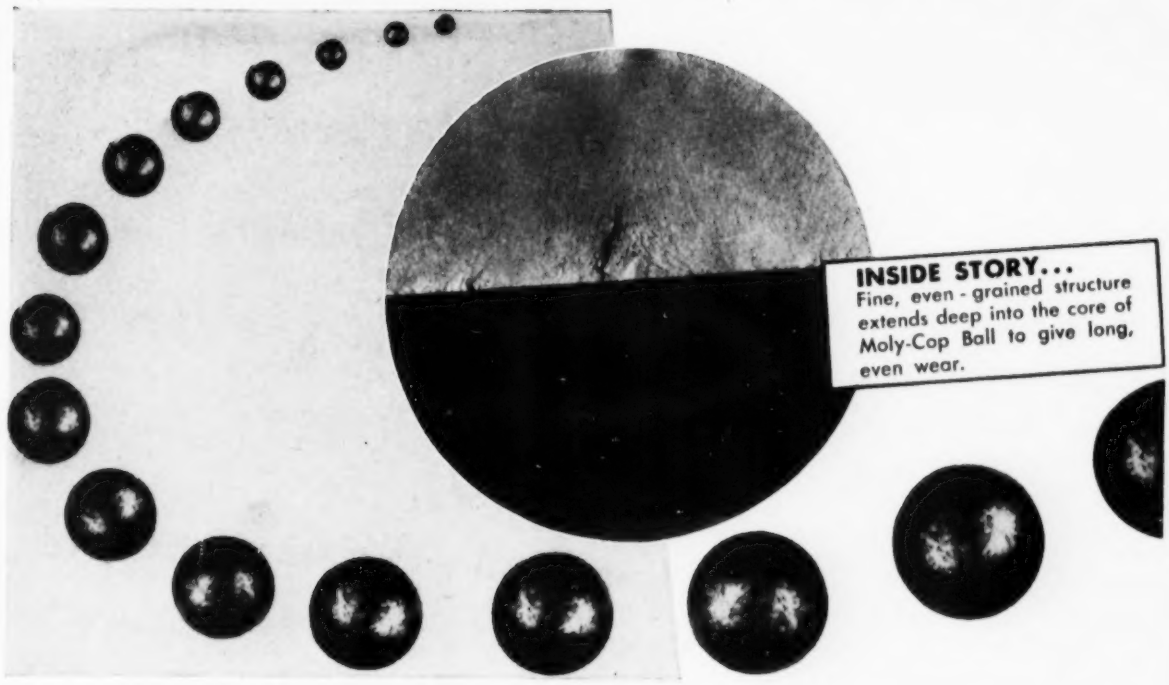
Wire Rope at Work—Some of the world's most beautiful marble comes from the eighteen quarries of the Georgia Marble Company. Through the years this firm has removed and marketed over 30,000,000 cu ft of the durable crystalline stone, which can be seen in famed buildings and memorials in every state of the Union.

The block shown in the picture, a dozen tons of particularly fine white marble, was photographed emerging from one of the company quarries near Tate, Ga. This handling job involved a lift of 175 ft, and the hoisting was done by a stiffleg derrick equipped with sound, dependable Bethlehem wire rope. Here, as always, the Bethlehem rope met every demand with plenty to spare, for it is a product made to take such loads in stride.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING



If you want a finer grind . . . use a finer ball!

SHEFFIELD MOLY-COP

TRADEMARK REG.

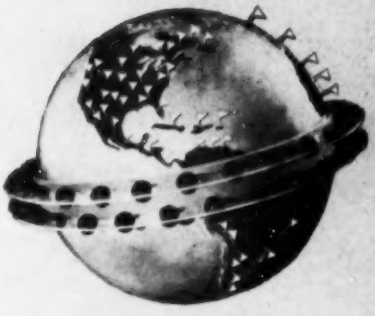
COPPER-MOLYBDENUM-ALLOY

Grinding Balls

For fine grinding you want a ball that will give you the highest possible production rate with the lowest cost per ton of material ground . . . fewer chargings, less "down time."

Sheffield Moly-Cop Balls meet that requirement — because Sheffield's exclusive alloy and automatically controlled manufacturing methods produce a ball of finer, denser, more uniform structure. You get toughness and greatest resistance to abrasion. Moly-Cop Balls wear evenly, retain their spherical shape longer.

Tests have proved that Moly-Cop Balls wear up to 35% longer than alloy cast steel balls; up to 50% longer than best quality unalloyed carbon forged steel; and up to 120% longer than cast white iron balls. Considering initial costs and length of service, the net savings that result from the use of Moly-Cop Balls are substantial.

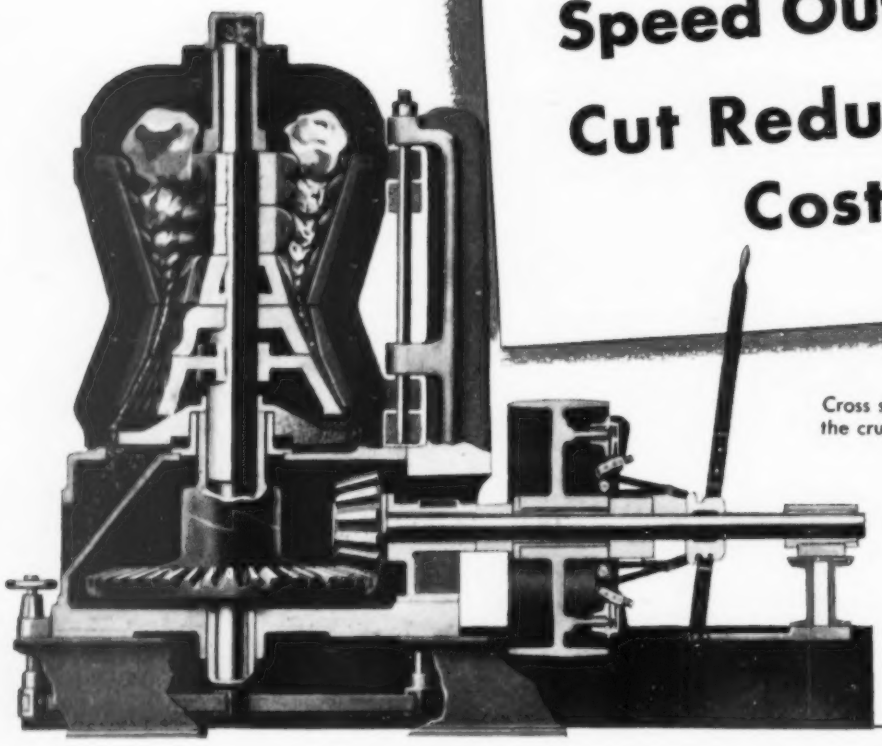


Used and proved around the world—*Sheffield engineers* are ready to prove the money-saving advantages of Moly-Cop Grinding Balls in your operation. Get in touch with us now.

SHEFFIELD
STEEL
CORPORATION
HOUSTON KANSAS CITY
TULSA
SUBSIDIARY OF ARMCO STEEL CORPORATION

Export Representatives: ARMCO INTERNATIONAL CORPORATION, MIDDLETOWN, OHIO

Here's How to Speed Output... Cut Reduction Cost



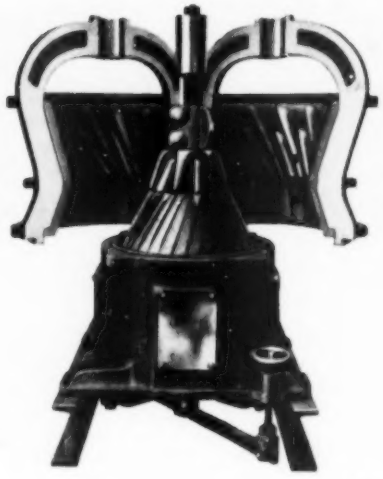
Cross section view illustrating the crushing action.

Use STURTEVANT Rotary Fine CRUSHERS

With the Sturtevant Rotary Fine Crushers you can crush or granulate to even sizes without excess dust. By simply turning the handwheel, the crusher can be quickly regulated to crush down to approximately ¼" and finer, or opened up to produce 1" size of finished product.

"Open-door" accessibility permits fast, easy, thorough cleaning.

Sturtevant Rotary Fine Crushers crush fast . . . do not clog. Available in output capacities from 1 to 30 tons per hour.



Sturtevant Mill Company

104 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

Designers and Manufacturers of

CRUSHERS • GRINDERS • SEPARATORS
CONVEYORS • MECHANICAL DENS and
EXCAVATORS • ELEVATORS • MIXERS

The muck pile tells the story of Alternate Velocity Loading

If you want the breakage this Pennsylvania quarry got, then try Alternate Velocity Loading with an alternate ROCKMASTER® pattern. This newest ROCKMASTER development has produced improved results in many quarries and it holds possibilities for mining and construction blasting.

In this blast, alternate holes were loaded with low velocity and high velocity charges. The faster millisecond delay caps fired the low velocity holes, putting the rock under maximum stress before shattering. This permitted the sharp punch of the second delay to penetrate further into the burden. The result was better breakage . . . a muck pile that is easy to dig. All holes were initiated from the bottom to prolong confinement of the blast . . . giving maximum results from Alternate Velocity Loading.

For complete details, see your Atlas representative or write to our Technical Division.

BLAST DATA:

Number of holes	11
Average depth	91′
Height of face	85′
Spacing	14′
Burden	27′
ROCKMASTER delays	1 to 6
Total explosives (Apex #2 LV and #4 HV)	11,400 lb.
Rock produced	34,170 Tons
Powder factor	3
Loading started	7:15 AM
Loading finished	10:15 AM
Blast fired	11:15 AM

ATLAS

ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

offices in principal cities

We couldn't get a color picture!

Too bad, too, because in color you could have seen that every foot of air hose is Republic Champion . . . with the Yellow Safety Cover.
All kinds of excavating, quarrying and mining depend upon the best in Air Hose . . . Republic Champion.
For longer hose life, extreme flexibility and a smooth, oil-resistant air-conductor, ask your local Republic Rubber Distributor for Republic Champion . . . with the Yellow Safety Cover. You will find his name in the yellow pages of your telephone directory, or, write directly to us.

REPUBLIC RUBBER DIVISION
LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO
INDUSTRIAL RUBBER PRODUCTS

Have you a dust recovery problem?

Bring it to
WESTERN PRECIPITATION

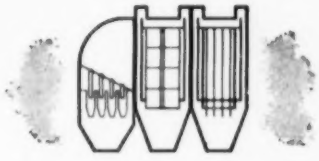
. . . The Only Organization With Years Of "Know-How" In BOTH *Electrical* And *Mechanical* Recovery Methods!

If you have any kind of a suspension-recovery problem—whether dust, fly ash, fume, fog or mists—it will pay you to bring it to the leading organization in the field . . . WESTERN PRECIPITATION CORPORATION. Western Precipitation not only pioneered, over 44 years ago, the first commercial application of the now-famous COTTRELL Electrical Precipitators, but also has been a leader for many years in the *mechanical* recovery field with its widely-accepted MULTICLONE Collectors.

Result:

Western Precipitation is unsurpassed in the all-important factor of "know-how" in BOTH the electrical and mechanical fields . . . knows from years of first-hand experience whether your particular problem can best be solved by mechanical or electrical methods—*or by a combination of the two* . . . can give you a direct and unbiased recommendation on the matter . . . and then can provide the complete installation under *one* responsibility, *one* overall performance guarantee, even where Combination Multiclone-Precipitator (CMP) installations are made!

Western Precipitation products and services include . . .



COTTRELL
Electrical Precipitators

. . . the most efficient recovery equipment for high recovery, long life, low maintenance on practically any type of suspensions, wet or dry. COTTRELLS can be designed to handle a few c.f.m. —or millions—with equal ease, and at virtually any operating temperature. Recovery efficiencies closely approach 100% recovery, if desired, with very low draft loss, minimum power costs and negligible labor costs. ***By all standards, Western Precipitation COTTRELLS give highest recovery at lowest cost per-year-of-service!***

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Mechanical Collectors

. . . the most efficient, most compact, most trouble-free mechanical equipment for recovering suspensions from gases. Because of their unique small-tube design, MULTICLONES are unsurpassed in mechanical recovery efficiencies—require less space, less maintenance, and are far simpler to install. No filters or screens to replace, nothing to burn or cause fire hazards, no high speed moving parts to repair or replace. These and many other advantages make MULTICLONE Collectors the logical choice on installations where mechanical recovery is selected.

CMP UNITS
(Combination Multiclone-Precipitator)

. . . combine, in *one* compact installation, *both* mechanical and electrical recovery principles so that maximum benefit is obtained from the advantages inherent in each method. The MULTICLONE section centrifugally removes the larger and heavier suspensions (down to a few microns in diameter) . . . and the COTTRELL section then electrically removes the very small particles remaining in the gases. Thus, the bulk of the recovery is obtained with relatively low-cost equipment, and the final clean-up is obtained with equipment having unusually high recovery efficiency—approaching theoretically perfect, if desired.

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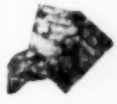

Let our experienced engineers study your recovery requirements and make an unbiased recommendation on the equipment best suited to your particular problem. A wire, phone call or letter to our nearest office places this unique "know-how" at your service, without obligation.

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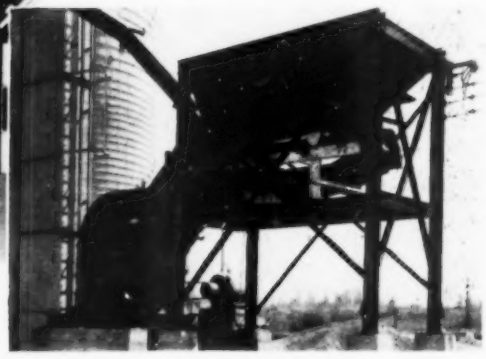

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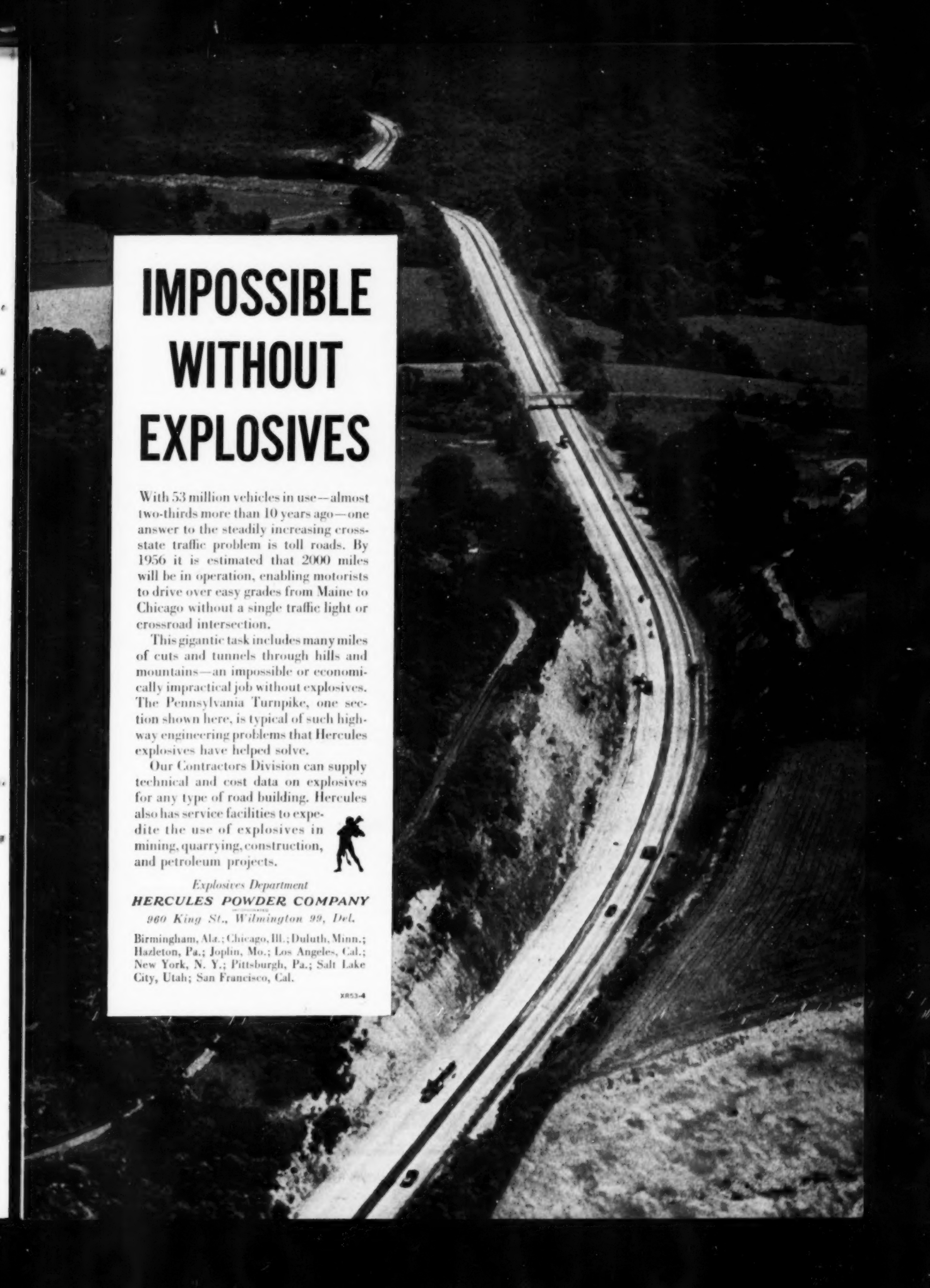

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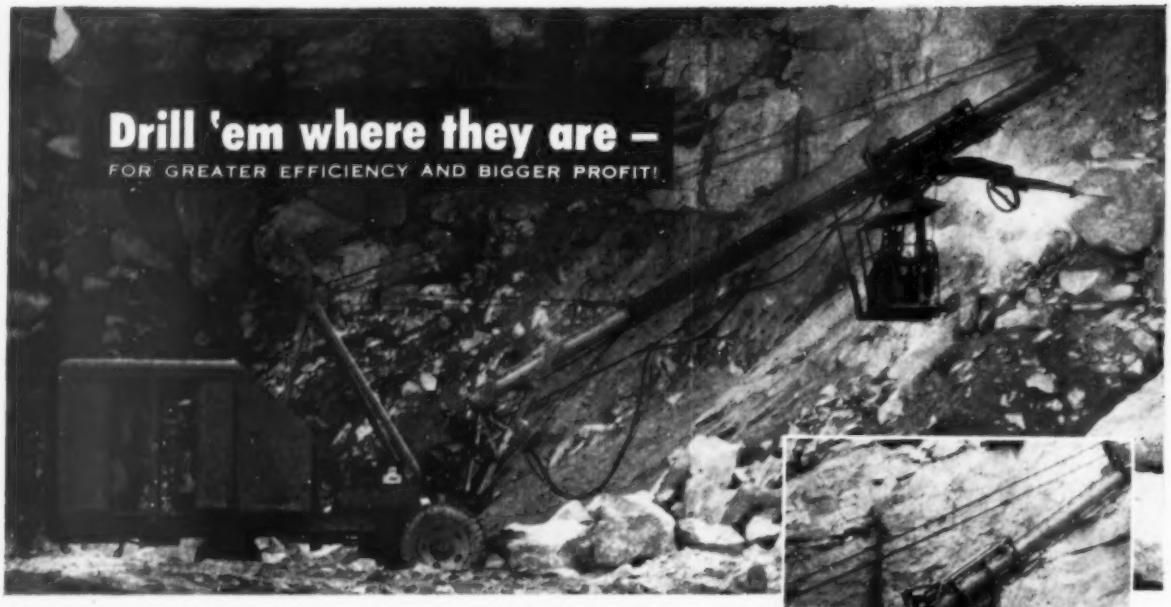

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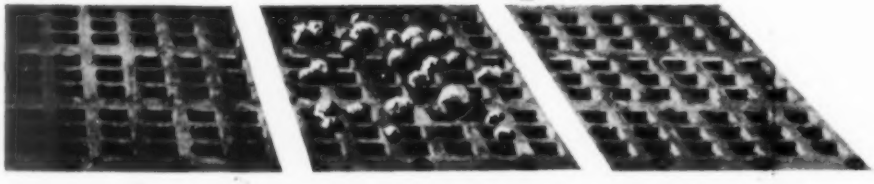

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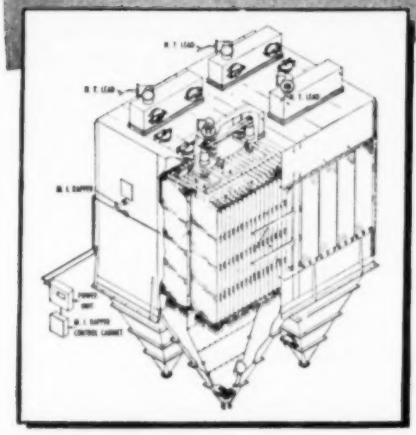

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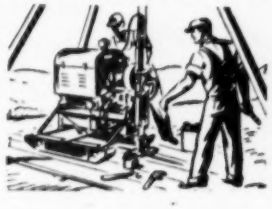

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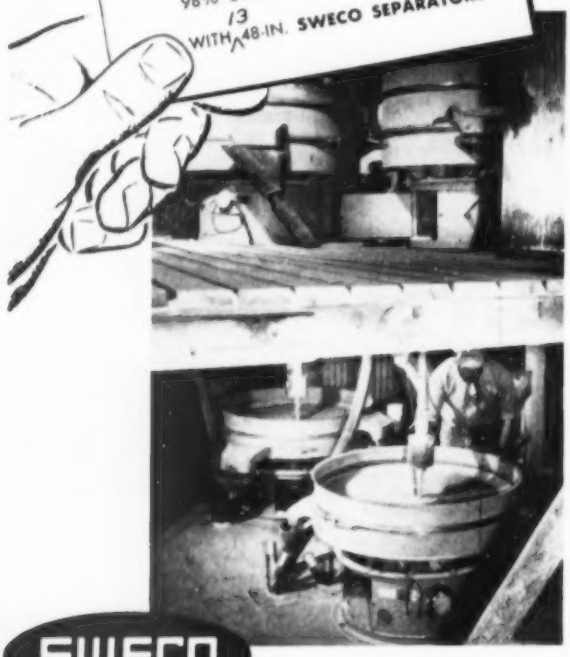

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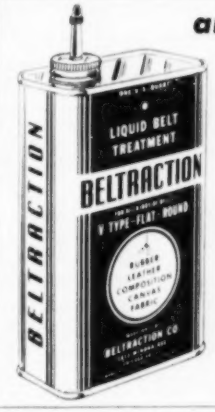

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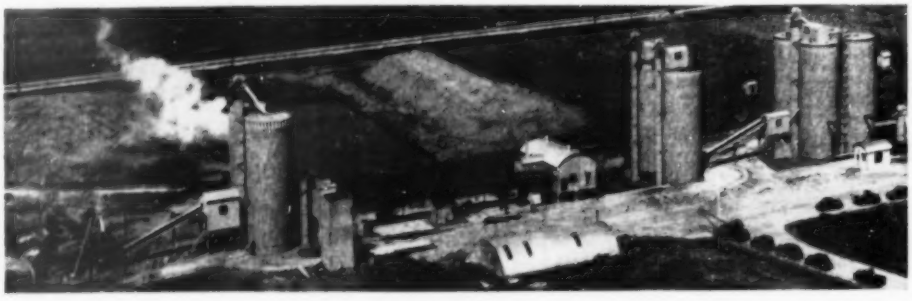

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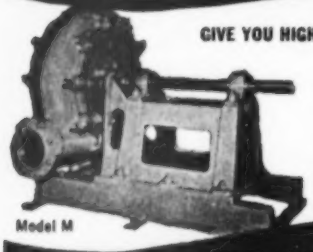

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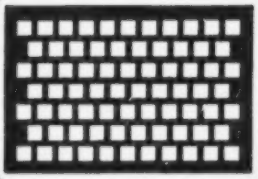

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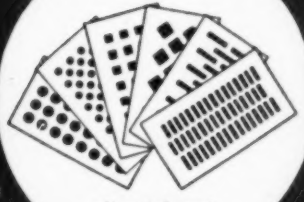

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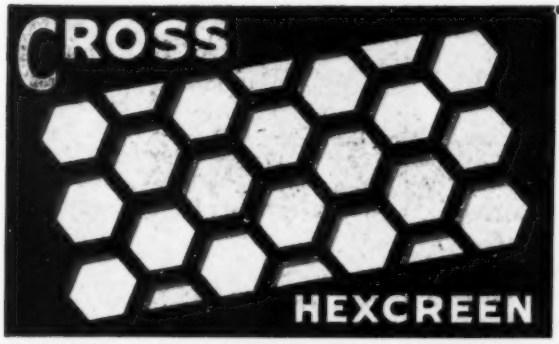

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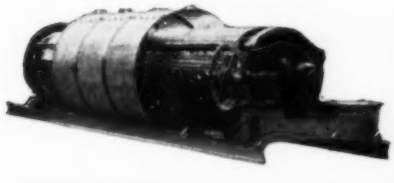

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SAND-DREDGE complete, late model in A-1 condition to handle 200 T.P.H. Diesel Engine, priced reasonable. Also COMPLETE PLANT GRAVEL to produce concrete sand and gravel in connection with SAND-DREDGE. Must be late model in A-1 condition, priced reasonable. Reply to:

BOX NO. A-11
c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn Street, Chicago 5, Illinois

DREDGING WANTED

Have 18" suction—Powered by Cummins 335 HP.
Free estimates on your work.

McHUGH SAND & GRAVEL
Phone 4516 Blue Rapids, Kansas

POSITION WANTED

Graduate Mechanical Engineer. P.E. License—N.Y.S. Eight years experience, six with major cement manufacturer, in plant design, plant construction, production equipment application, procurement, maintenance, cost control, estimating, and administration. Desire position utilizing qualifications and presenting opportunities.

BOX NO. A-17, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn Street Chicago 5, Illinois

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.
Consulting Engineer
75 Second St.
Newburgh, N. Y.
Phone: 1828
9 South Clinton St.
Chicago 6, Ill.
Ph. FR 2-4186

Operation
Plant Layout
Design
Construction Appraisals

Precision Chemical Analysis of rare and common Minerals & Ores. Carbonate, Phosphate and Silicate Rocks.
H. J. HALLOWELL
Consulting Chemist
323 Main St. Danbury, Conn.

Quarry Production Manager-Superintendent seeks medium to large capacity quarry connection. Outstanding 15 year record in trap, granite, dolomite and limestone. Excellent references. Any U.S. location.

BOX NO A-10, c/o PIT AND QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

8' or 9' diameter x 120' to 150' long Lime Burning Kiln. Advise location, age, manufacturer, condition and price.

THILMANY PULP & PAPER CO.
Kaukauna, Wisconsin

FOR SALE

Model 101 Austin Western Portable Crushing Plant with 10 x 36 Jaw Crusher and 30 x 18 Roll Crusher powered by Murphy Diesel Engine. Plant new in March 1953.

GALLO ASPHALT COMPANY
32 Woolsey Street Irvington, N. J.
ESSex 3-9066

SPECIAL SALE!

ECA CONSTRUCTION EQUIPMENT

Check these items NOW at your nearest Plant

CHICAGO • PHILADELPHIA • PITTSBURGH

AIR COMPRESSORS
Portable, 2-Stage

500 cu. ft. Ing. Rand, Mdl. K-500, 100#, Waukesha-Hesselman Diesel engine, 4 pneu. tires, hydraulic clutch.

315 cu. ft. Ing. Rand, 4 cyl. Wauk. gas eng., 4 steel wheels. $1,500.

210 cu. ft. Sullivan, 4 cyl. Buda gas eng., steel wheels. $1,500.

160 cu. ft. Gardner Denver, 60 HP Buda gas eng., 4 steel wheels. $1,500.

WE HAVE A LARGE STOCK OF AIR COMPRESSORS, ELECTRIC, GAS AND DIESEL DRIVEN. FROM 105 to 500 CU. FT.

BOILERS, HORIZ. & VERTICAL

115 HP Marion Loco. type, 151#, 60" dia., 20' long. Excel. shape.

125 HP Erie City Economic, 100#, loco. type, Nat'l. Board, self-contained, excel. condition.

75 HP Indus. Brownhoist 150# vertical type, Nat'l. Board.

40 HP Nagle, 125# pressure, 48x108", ASME 1292, w/fittings. Vertical type.

BUCKETS, DRAGLINE

2 Yd. Page, Type RH, wt. 5400#.

1 Yd. Page Mdl. RH Automatic #4-2614, wt. 3700#. Volume 31.8 cu. ft.

DERRICKS, GUY & STIFFLEG

20-Ton Terry Steel Erectors Guy Derrick, 115' mast, 105' boom, thoroughly rebuilt, perfect condition.

30-Ton Wiley Mdl. F Steel Stiffleg, 60, 80 or 100' boom, rated with 60' boom 30 ton @ 38', 15 ton @ 57'.

This Month's
SPECIALS

CAR PULLERS

15 HP Mead Morrison #A-4015, Lincoln motor 220/3/60, 15,000# @ 45 FPM. Excel. condition.

7½ HP Mead Morrison #952, 3/60/220, handle 1 to 5 loaded cars.

CRANES, CRAWLER

1½ yd. Mdl. K-360 Link Belt Crane, Ser. 1959, Cat. D-13000 Diesel eng., 80' boom, hydraulic operated controls. Good operating condition. Only $15,000.

1½ yd. P&H Mdl. 655-A Diesel Crane or Dragline, Ser. 6426, 80' boom, 20' jib, Cat. D-13000 engine, hi gantry.

1½ yd. Lorain Mdl. 77 Diesel Crane, Ser. 9163, D-13000 Cat. engine, 45' to 85' boom, 20' jib.

Mdl. 501 Koehring Crawler Crane #1071, 60-70-80' boom, 18' jib, Mdl. K Wisc. gas eng. Cap. 40,000# @ 12'.

No. 3 Northwest Crawler Crane, Ser. 4603, ¾ yd., 40' boom, good condition.

¾ yd. LS-85 Link Belt Crane, year 1946, Cat. D-4600 Diesel eng., 40' boom, good operating condition.

¾ yd. Mdl. 255A P&H Crane, Ser. 5750, power 6 cyl. Waukesha gas eng., 35' boom.

CRANES, LOCOMOTIVE

25 ton American Locomotive Crane, Mdl. 825, 50' boom, Cummins Diesel eng. A real buy.

30 ton Mdl. F OHIO #3266, 50' boom, oil fired, Nat'l. Board 200-lb. boiler.

75 KW DIESEL AC GENERATOR

75 KW Diesel AC Generator, 220/440/60/3, Cat. D-13000 Diesel eng., complete with all controls and starting eng. Generator completely rewound.

HOISTS, ELECTRIC

50 HP American 3/drum, 3/60/220, slipring, 7500# @ 200 FPM. Wt. 10,000#.

50 HP Mundy 2/drum, #15691, National 2-spool attached swinger, 3/60/440 slipring, 7,000# @ 195 FPM.

50 HP Thomas Class A 2/drum, 3/60/220 slipring, 6,000# @ 250 FPM.

WE HAVE A LARGE STOCK OF GASOLINE, ELECTRIC, DIESEL AND STEAM DRIVEN HOISTS, ALL SIZES AND TYPES.

LOCOMOTIVES, 24" & STD. GA.

6 ton 24" ga. Whitcomb, gasoline, Type MO #11438.

16 Ton Plymouth, std. ga., Ser. 3819, JH6 Buda gas eng.

15 ton Vulcan Std. Ga., Ser. 3903, 6 cyl. LeRoi Mdl. JMS gas eng.

MIXER, CONCRETE, STATIONARY

28-S Jaeger Stationary Mixer, 25 HP electric, 220/440/60/3, 100 gal. water tank, rebuilt.

PUMPS, CENTRIFUGAL

12" Dayton Dowd, vertical, 50 HP, 3/60/220/440. 6,000 GPM @ 19', 4250 GPM @ 32'. Wt. 4110#.

6" Carter, self-priming, Hercules gas engine. 1,500 GPM.

All types of pumps, gas and electric, from 1½" to 12".

TRACTORS, CRAWLER MTD.

International TD14 Crawler Tractor, sideboom attachment #233, Ser. TDF 15152.

Caterpillar D4 Crawler Tractor, Ser. 5T6035W, with LeTourneau Power winch. Bargain.

All this equipment is owned by us and may be inspected at one of our show rooms.

PARTIAL LIST ONLY • SEND FOR OUR STOCK LIST ***WE BUY • REBUILD • SELL AND RENT***

CHICAGO 12, ILL.
1160 S. Washtenaw Ave.
NEvada 8-2400

PITTSBURGH 30, PA.
Box P-933
FEderal 1-2000

ECA
EQUIPMENT CORPORATION OF AMERICA

CLIFTON HEIGHTS, PA.
Box P-608, Suburb of Phila.
MAdison 6-2200

NEW YORK 7, N. Y.
30-P Church St.
WOrth 2-0036

DUMP CARS
46—KOPPEL 1½ YD., 24 & 30 & 36 & 42 IN. GA. V SHAPED.
115-2 YD., 3 YD., 4 YD., 36 IN. GA.
60—STD. GA. 12 YD., 16 YD., 20 YD. & 30 YD. CAP.
6—10 TON PHOENIX QUARRY CARS—STD. GA.

GRINDING MILLS
HARDINGE, 5'x 22", 6'x 22", 8'x 22", 10'x36" & 10'x 48".
BALL MILLS, 5x6, 6x6, 6x12, 7x6 & 9½x11.
ROD MILLS, 3x10, 4x7 & 5x14.
TUBE MILLS, 5x18, 5x22, 5½29 & 6x22.

PULVERIZERS
HERCULES JUNIOR 3 ROLL MILL.
1 & 3 RAYMOND AUTOMATIC.
B&W AND RILEY COAL PULVERIZERS.
#87 RAYMOND IMP MILL.
33" RAYMOND VERTICAL MILL.
WILLIAMS GNOME ROLLER MILL.

SEPARATORS & CLASSIFIERS
5', 3', 14' & 16' AIR SEPARATORS.
6' x 14' HARDINGE COUNTER CURRENT.
DINGS MAGNETIC TYPE IR 3 STAGE 60"
DORR 40' DIA. x 30'—3 TRAY, 4 COMP. THICKENER.
STANDARD THICKENERS—12' TO 60' DIA.
RAKE & BOWL CLASSIFIERS, 2x15 SSFB, 6x22 DSF, 3x25x10 TURRET BOWL.
SPIRAL, 48"x19' & 54"x30' SIMPLEX & 60"x42' DUPLEX.

HAMMER MILLS
JEFFREY 36"x24" B-2 & 36"x26" B-2.
WILLIAMS #30 GA. & #1, 5 & 7 JUMBOS.
CEDAR RAPIDS 2023, 3033 & 4033.
GRUENDLER 2XB, 5XD & 3XD & 6XD REVERSIBLES.
PENNSYLVANIA: C 4-30, SXC 15-58, SXT-11 & 13.

ROTARY DRYERS & KILNS
DOUBLE SHELL: 60"x35' & 90"x60'.
SINGLE SHELL: 4x20, 4'x40', 6'x40' & 6'x60'.
KILNS: 6'x60', 6'x80', 8'x125', & 10'x125'.

BLAST HOLE & WELL DRILLS
LOOMIS 41, KEYSTONE 51 & 71.
10—IR—FM2—WAGON DRILLS.
1—BUCYRUS ERIE 29T ELECTRIC.

CRUSHERS
42x48 TRAYLOR JAW.
24x36 FARREL 1549.
24x36 BUCHANAN SECTIONAL JAW.
30x42 BUCHANAN SECTIONAL JAW.
18x36 FARREL B JAW.
15x36 FARREL B STAT. PLANT.
2636 HYDROCONE A. CHAL. GYRAT.
36" TRAYLOR TY GYRAT.
24x36 DIAMOND PRIMARY PORTABLE DIESEL.
10x36 DIAMOND PORTABLE SECONDARY.
10x36 AUSTIN WEST. SECONDARY.
2880 UNIVERSAL JR. GRAVELMASTER.
2880 UNIVERSAL SR. GRAVELMASTER.
TELSMITH PORT. 8x32—28" GYRAT.
22x36 CEDAR RAPIDS PORT. PRIMARY WITH DIESEL.
CEDAR RAPIDS PRIM. & SECON. 16x24 JAW 18x24 ROLL COMPLETE.
PIONEER 56A 30x42 JAW 54VA, 54x24 ROLL.
PIONEER 300 WA CRUSHER-WASHER SCREEN-6x20.

JAW CRUSHERS
BLAKE TYPE—48x60, 30x36, 24x36, 18x36, 13x30, 12x24, 12x16.
SINGLE SHAFT—18x36, 15x36, 15x30, 10x40, 10x30, 10x20.
CAM & ROLLER—24x40, 14x26, 11x26, 10x20, 6x20.

GYRATORY FINE REDUCTION CRUSHERS
NEWHOUSE 7", 10", 14"—KENNEDY 198, 258, 37—SUP. McC. 6" & 10" AL. CHAL. 322R, 272R, 536R—TRAYLOR TY 36".

GYRATORY STD. REDUCTION CRUSHERS
6", 10", 14" & 20" SUP. McC.—GATES AL. CHAL. 3, 4, 5, 6, 7½, 8, 9, 12.
PARTS FOR 42" SUPERIOR McCULLY.

STEEL DERRICKS
GUY: 8 TON 85 FT. BOOM, 25 TON 60 FT. BOOM, 15 TON 100 FT. BOOM, 20 TON 115 FT. BOOM, 50 TON 100 FT. BOOM.
STIFF LEG: 5 TON 70 FT. BOOM, 15 TON, 100 FT. BOOM, 25 TON 100 FT. BOOM, 75 TON 135 FT. BOOM.

ASPHALT & OIL TANKS
15—8,500, 10,000 & 20,000 GAL. CAP. WITH COILS. —6—10,000 GAL. R.R.

SCREENS
VIBRATING: 3x6, 3x8, 3x5, 4x8, 4x10, 4x12 & 5x12 HUMMER, NIAGARA & ROBINS, LINK BELT.

LOCOMOTIVES
5—45 Ton G.E. Diesel Elec.
1—20 TON WHITCOMB GAS.
1—10 TON DAVENPORT GAS.
1—20 TON G.E. DIESEL ELEC.

AIR COMPRESSORS
420 FT. WORTHINGTON BELTED.
676 FT. WORTHINGTON ELECTRIC.
1008 FT. INGERSOLL RAND. ELEC.
1880 FT. CHGO. PNEU. ELEC.
2800 FT. INGERSOLL RAND ELEC.
3146 FT. SULLIVAN ELEC.
3873 FT. INGERSOLL RAND ELEC.

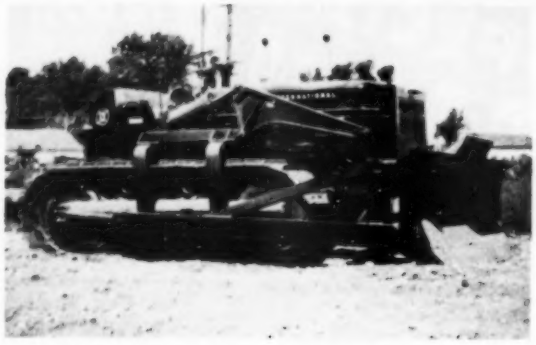
HYDRATORS & PULVERIZERS
CLYDE HYDRATOR WITH KUNTZ CONTINUOUS DUSTLESS SYSTEM, 4-5 T.P.H.
#1 RAYMOND AUTO PULVERIZER WITH SEPARATOR & CYCLONE.
36x24 JEFFREY R HAMMER MILL.
3 ROLL BRADLEY HERCULES JR. PULVERIZER.

10 SURPLUS NEW MERRICK WEIGHTOMETERS
FOR 18" - 24" - 30" - 36" & 42".

COMPLETE PLANTS BOUGHT

R. C. STANHOPE, INC.
60 E. 42nd St. New York 17, N.Y.

PRACTICALLY NEW TD-24 FOR SALE



IH TD-24, world's most powerful tractor, serial #1790, brought up to 1953 factory standards from engine thru final drives and New Pullman hydraulic straight dozer. Tractor carries 3 months guarantee and Dozer regular 6 month factory guarantee. Clearance Sale price—only $17,500. f.o.b. Morton, Illinois.

A. E. HUDSON COMPANY • MORTON, ILLINOIS

REBUILT AND NEW
GUARANTEED MOTORS
M.G. SETS • GENERATORS
Hoists • Compressors • Transformers
Units of Every Size and Description

SQUIRREL CAGE MOTORS
3 phase, 60 cycle, 220 or 440 volts (*2200 volts or higher)

HP	Make	Type	Speed
750	*G. E.	KT	720
500	*A. C.	6316SW	1800
300	*Westgh.	CS	3600
250	*I.. Allis	OGX148	720
200	A. C.	ARWWT	600
200	Westgh.	CS	600
150	G. E.	KT558	900
100	*Westgh.	CS774C	900

AIR COMPRESSORS

Size	Make	Type	PSI	Dispis
10 x 11	Worth	HB	100	294
11 x 12	Worth	HB	100	426
12 x 13	Worth.	HB	125	460
20 x 12 by 14	Sullivan	WN4	100	2032

TRANSFORMERS

KVA	Make	Phase	Pri.	Sec.
667	G.E. (H)	1	34500	480
400	G.E. (H)	1	2300	230/440

WRITE TODAY
WE'LL SELL, BUY OR TRADE
PHONE CANAL 6-2900
CHICAGO Electric Co.
1329 W. CERMAK ROAD
CHICAGO 8, ILL.

HOUGH HF Payloader, ¾ cy. hydraulic trip bucket, new tires, 1950 yr. like new condition. $3,000.
KOEHRING WD60 Diesel Dumptor, good cond. $3,750.
BAY CITY 1¼ cy. Shovel & Dragline Comb. current mdl. 63, excellent condition. 1948 yr. $8,500. Rent $850/mo. apply purchase.
BYERS 83 ⅝ cy. Shovel & Dragline Comb. 1947 yr. Good running condition. $4,000.
JAEGER 500 cfm Port. Compressor w/Cat. D13000 engine, 2000 hrs. use. Like new. $5,500 Rent apply purchase.
SULLIVAN 210 cfm Port. Diesel Compressor, mdl. WK-80-210, mounted pneu. tires, excellent. $2,650.
UNIVERSAL 20x36 r.b. Jaw Crusher. Good. $4,500.
TELSMITH 40x22 r.b. Double Roll Crusher. Good condition. $3,000.
LIPPMANN 24x36 r.b. Jaw Crusher. "Grizzly King", factory guaranteed. $10,000 Reg. new price $16,500.
CEDAR RAPIDS 10x36 r.b. Jaw Crusher, excellent. $2,500.
UNIVERSAL 20x36 r.b. Jaw Primary Portable Plant, including Cat. D8800 diesel power, underconveyor, apron feeder, mounted tandem pneu. tires. Good. $10,000.
JAW DIES for Iowa 20x36, Amsco 8803D moveable. New. $150.
WILLIAMS NF-10 Hammermill, excel. $1,650.
GILSON 22 Hammermill w/lime hammers & grates. Al. $600.
UNIVERSAL 10x24 p.b. Jaw Crusher. Al. $650.
SIMPLICITY 4x12 4-deck Screen. Al. $2,000.
SIMPLICITY 4x10 3-deck Screen. Excel. $1,850.
SIMPLICITY 3x10 2-deck Screen. Good. $950.
UNIVERSAL 24"x30" Port. Conveyor w/Wisc. engine, complete. Brand new. $1,700. Reg. price $2,200.
OWENS "K" ¾ cy. wide rehandling clamshell bucket. Al. $500.
BLAW KNOX 1¼ cy. wide rehandling clamshell, type 617, 20% new. $600.

WENZEL MACHINERY CO.
2136 Jefferson St., Kansas City, Mo. Harrison 0021

FOR SALE

Bucyrus-Erie 120-B electric dragline, mounted on caterpillars; 100 foot boom; 4¾ cubic yard bucket. Has recently been reconditioned and in excellent condition, has been used mostly for rehandle. Reason for Sale: Less rehandle in new coal pits and have two other machines. Specifications and photographs sent on request.

Northwestern Improvement Company
Colstrip, Montana

MARCY BALL MILL

6'x41½' complete with 75HP slip ring motor and drive, $4500.00 FOB Cars Calif. Pt.

ROTARY DRYER

80'x7'x6'x½" complete with trunnions and drive. $6500.00

for details write

C. H. GRANT COMPANY
2515 Willow St. Oakland, Cal.

TRUCK MIXER FLEET FOR SALE

MACK TEN WHEEL TRUCKS JAEGER–REX–TRUCK MIXERS

ALL AVAILABLE IMMEDIATE DELIVERY

	Mixer				Truck				
	Year	Make	Model	Ser. No.	Year	Make	Model	Ser. No.	Selling Price
	1950	Jaeger	4½HMTL	J12118	1947	Mack	LFSW	LF2D-1099	$ 5,750
	1951	Jaeger	4½HMC	J14344	1947	Mack	LFSW	LF2D-1127	6,250
	1952	Jaeger	5½TC	J13350	1947	Mack	LFSW	LF2D-1233	6,300
	1947	Jaeger	5½HMB	None	1942	White	——	251085	3,050
	——	Rex	5½ yd.	TNN-288	1942	White	——	261134	3,500
	1950	Jaeger	5½TC	J11633	1950	Mack	LJSW	LJ2D-2880	9,450
	1950	Jaeger	5½TC	J11632	1950	Mack	LJSW	LF2D-2885	9,450
	1950	Jaeger	5½TC	J11630	1950	Mack	LJSW	LJ2D-2883	9,450
	1951	Jaeger	5½HMC	J12723	1950	Mack	LJSW	LJ2D-2882	9,450
	1950	Jaeger	5½TC	J11634	1950	Mack	LJSW	LJ2D-2879	9,450
	1952	Jaeger	5½TC	J13349	1950	Mack	LJSW	LJ2D-2881	9,750
	1950	Jaeger	5½TC	J11635	1950	Mack	LJSW	LJ2D-2888	9,450
	1947	Rex	4½ yd.	TH302	1950	Mack	LJSW	LJ2D-2886	8,750
	1950	Jaeger	5½TC	J11629	1950	Mack	LJSW	LJ2D-2887	9,450
	1947	Rex	5½ yd.	TNN-360	1952	Mack	LFSW	LF2D-2553	8,950
	1952	Jaeger	5½TC	J13347	1952	Mack	LFSW	LF2D-2557	9,750
	1952	Ransom	5½ yd.	52932	1952	Mack	LFSW	LF2D-2555	9,250
	1952	Jaeger	5½TC	J11631	1952	Mack	LFSW	LF2D-2556	9,450
	1952	Jaeger	5½TC	J13355	1952	Mack	LJSWX	LJ2DX-4884	12,900
	1952	Jaeger	8TC	J13341	1952	Mack	LMSW	LM2DX-2906	16,500
	1947	Rex	4½ yd.	TR-473	1947	Mack	LFSW	LF2D-1116	5,800
	——	Rex	4½ yd.	None	1947	Mack	LFSW	LF2D-1117	5,800
	1952	Ransom	3 yd.	None	1945	Fed.	——	None	3,500
	1944	BlawKnox	4 yd.	None	1944	White	——	251363	3,500
	1944	BlawKnox	4 yd.	None	1944	White	——	None	3,500
	1944	BlawKnox	4 yd.	None	1944	White	——	251867	3,500
	1947	Rex	5 yd.	None	1944	White	——	250731	3,500
	1944	Jaeger	4 yd.	None	1944	White	——	251783	3,500
	1944	Jaeger	4 yd.	None	1944	White	——	None	3,500
	1944	Jaeger	4 yd.	None	1944	White	——	256987	3,500
	1952	Jaeger	5½TC	J13353	1950	Mack	LJSW	LJ2D-2884	9,450
	1952	Jaeger	5½TC	J11628	1952	Mack	LFSW	LF2D-2554	9,450
	1952	Jaeger	5½TC	J11626					2,750
	1947	Rex	5½ yd.	TNN-407					1,250
	1952	Jaeger	4½HMC	J14345					3,450
	1947	Jaeger	4½HMB	None					1,500
	1946	Jaeger	4½HMB	None					1,500
	1947	Rex	4½	TR286					950
	1947	Rex	4½	TR288					950
	1946	Jaeger	5TC	None					450
	1951	Ransom	5½	52355					2,750
	1947	Jaeger	5½	J11014					1,750
6	1952	Jaeger	6½HMC						3,750
6	1949	Jaeger	4½HMB						2,500
3	1950	Ransom	5½Hi-Dump						2,500

This equipment used on one job with careful supervision and maintenance. A number of truck mixers unmounted can be used to meet your requirements — will substitute truck or mixer.

Terms can be arranged with responsible purchasers.
TC indicates horizontal mixer; TM indicates high discharge mixer.

THE JAEGER-LEMBO MACHINE CORP.
Northern Blvd. at 127th Street
Flushing 52, New York
Newtown 9-7777

JAEGER-LEMBO MACHINE CORPORATION OF NEW JERSEY
U. S. Highway 22
Springfield, New Jersey
Millburn 6-1066

FOR VALUES-BUY BRILL

KILNS — DRYERS

2—9' x 80' Allis Chalmers, ⅝" shell.
2—8' x 125' Vulcan, ⅝" shell.
2—7' x 160' Vulcan, ⅝" shell.
2—7' x 120' Vulcan, ½" shell.
1—7' x 60' Vulcan, ⅜" shell.
1—7' x 20' Link Belt Roto-Louvre.
1—7' x 55' Bartlett Snow, ½" shell.
6—6' x 25', 6' x 30', 6' x 40' steam tube.
1—5' x 67' Reeves, 5/16" shell.
1—5' x 60' Vulcan, ⅜" shell.
1—5' x 40' Cummer, ⅜" shell.
1—4'6" x 50' Vulcan, ⅜" shell.
1—4'6" x 30' Louisville, ¼" shell.
2—4' x 20' Cummer, 5/16" shell.
2—3'10" x 16' Link Belt, Roto-Louvre.
1—2'7" x 8' Link Belt, Roto-Louvre.

PULVERIZERS — MILLS

3—Raymond High Side Mills. 3, 4, 5 Roll.
2—#40, #50 Raymond IMP Mills.
2—#412, #512 Raymond Bowl Mills.
2—Raymond #1 Pulverizers with 6' double whizzer separators.
2—Williams 4 & 5 Roll High Side Mills.
4—Hardinge 4½'x16", 5'x22", 6'x22", 6'x48", 10'x48".
1—Patterson 6'x8' Ball Mills.
2—Abbe 5'x8'6", 5'x22', silex lined Tube Mills.

CRUSHERS

1—Simmons 4' Cone Crusher.
1—Traylor 56" x 24" Crushing Rolls.
1—Allis Chalmers 36" x 48" Jaw Crushers.
10—Jaw Crushers 5"x6" to 24"x36".
1—McCully 10" Gyratory.

SCREENS — SEPARATORS

6—Tyler Hammer Screens 3'x5', 4'x5', 4'x7', 4'x10', 5'x10', 4'x15'.
1—Seco 4'x10' double deck Screen.
5—Rotex 40"x84", 40"x120".
3—Air Separators 6', 8', 10', 14'.

MISCELLANEOUS

1—Hardinge 6'x14' Classifier.
2—Oliver Rotary Dewaterers 8'x4'.
1—Complete Lime Hydrating Plant.
12—Bucket Elevators 20' to 90' centers.
5—Belt Conveyors 24" to 36".
2—Akins 54"x34', 2'x15' Classifiers.

LIQUIDATION

COMPLETE LIME & HYDRATE PLANTS
PRICED RIGHT for QUICK SALE

Milltown, Ind.

2—Vulcan 8'x125' Rotary Kilns complete with 50 HP motor drives.
1—Raymond #402 Bowl Mill, 40 HP motor drive.
1—Allis Chalmers 7'x60' Rotary Dryer.
1—Vulcan 4½'x50' Rotary Dryer.
1—Allis Chalmers 48"x36" Jaw Crusher.
1—Sturtevant Laboratory Roll Crusher, 5"x8"
2—Raymond #1 Pulverizers complete with 5'6" dia. Raymond double whizzer Separators, piping, cyclones, fans.
1—Raymond 5 Roll high side Mill with double whizzer Separator, piping, fan and motors.
1—Seco 4'x10' double deck Screen.
1—450 Ton Steel Hopper, 22'x24'6" with 12'8" cone on structural steel legs.
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42" x 14" Traylor, 2 roll.
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18" x 65' centers, complete.
30" x 7'5" centers.

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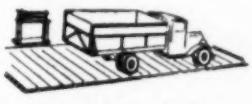

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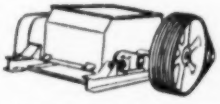

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Tests and borings assure 800 gallons of water per minute. All zoning laws and necessary permits complied with.

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Also 60 acres of fill on site of proposed Toll Road

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Smith Engineering Works, Size 28 x 12.. 700.00

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16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
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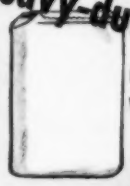

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